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U.S. NUCLEAR NONPROLIFERATION POLICY

HEARING

BEFORE THE

COMMITTEE ON FOREIGN RELATIONS
UNITED STATES SENATE

NINETY-SEVENTH CONGRESS

SECOND SESSION

SEPTEMBER 29, 1982

Printed for the use of the Committee on Foreign Relations

U.S. GOVERNMENT PRINTING OFFICE
11-837 O WASHINGTON : 1983

S 381-20

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U.S. NUCLEAR NON-PROLIFERATION POLICY

WEDNESDAY, SEPTEMBER 29, 1982

UNITED STATES SENATE,
COMMITTEE ON FOREIGN RELATIONS,
Washington, D.C.

The committee met, pursuant to notice, at 10:08 a.m., in room 4221, Dirksen Senate Office Building, Hon. Charles H. Percy (chairman of the committee) presiding.

Present: Senators Percy, Pressler, and Glenn.

Senator PRESSLER [presiding]. I will call this meeting to order.

During the past year and a half, through a series of statements and actions, the Reagan administration has established its nuclear nonproliferation policy. While other observers have sought to analyze the meaning and implication of the administration's approach on an issue by issue basis, through today's hearings, this committee will attempt to examine this policy as a whole.

Much of what this administration has attempted to do in the nuclear nonproliferation field rests upon the basic assumption which claims that being a reliable supplier is the most effective way of preventing weapons spread. We intend to examine this assumption. In specific terms, the administration has turned away from the restrictive approach adopted by the previous administration in two major areas, in plutonium use, which has both domestic and international implications, and in the transfer of certain dual use materials, equipment, and technologies. Dual use items are those which have very legitimate uses in commerce but, given nuclear weapons aspirations and skill, they can be diverted to bombmaking programs. We intend to examine both the plutonium use and dual use policies in today's overview of Reagan administration nuclear nonproliferation policy.

In brief, today's hearing represents an attempt to produce a net assessment of the administration's nonproliferation policy, where it has taken us, and where it might take us in preventing nuclear weapons spread.

Before introducing the witnesses, I must take note of a very ominous development in international cooperation on nuclear nonproliferation. The International Atomic Energy Agency [IAEA] is perhaps the most effective international structure in preventing weapons spread. Its safeguards program is central to thwarting the aspiration of potential proliferators. While there are deficiencies in the IAEA's monitoring capabilities, these problems are being corrected, and the agency's performance will improve.

Last Friday, Israel's credentials to the IAEA's General Conference were rejected on issues that have nothing to do with the IAEA. I hope

this instance does not mark the beginning of an ominous trend. We cannot afford to politicize an organization that serves global interests independent of national boundaries or ideologies.

Nuclear nonproliferation is in every nation's ultimate interest. In the wake of this illegal and unjustified action, the United States, joined by a large number of responsible states, walked out of the Vienna meeting. U.S. policy toward the IAEA is under review. I believe that the administration should move quickly to complete this process, and that the focus of its study be on how to prevent divisions within the organization along political lines.

Our first witness today is the Deputy Assistant Secretary of State for Nuclear Energy and Energy Technology Affairs, Jim Devine.

Mr. Devine, please begin.

STATEMENT OF JAMES B. DEVINE, DEPUTY ASSISTANT SECRETARY OF STATE, NUCLEAR ENERGY AND ENERGY TECHNOLOGY AFFAIRS, DEPARTMENT OF STATE, ACCOMPANIED BY FREDERICK McGOLDRICK, DIRECTOR, OFFICE OF NUCLEAR NONPROLIFERATION AND EXPORT POLICY, DEPARTMENT OF STATE; CARLTON STOIBER, DIRECTOR, OFFICE OF NUCLEAR EXPORT CONTROL, DEPARTMENT OF STATE; AND WARD BARMON, DEPUTY DIRECTOR, OFFICE OF NUCLEAR TECHNOLOGY AND SAFEGUARDS, DEPARTMENT OF STATE

Mr. DEVINE. Thank you, Senator.

I would like to introduce three people who are at the table with me. On my right is Mr. Frederick McGoldrick, who is Director of the Office of Non-Proliferation and Nuclear Export Policy. Then there is Mr. Ward Barmon, Deputy Director of the Office of Nuclear Technology and Safeguards, and Mr. Carlton Stoiber, Director of the Office of Nuclear Export Control.

I have a statement, Mr. Chairman, but I would like to read a shortened version if I may.

Senator PRESSLER. Certainly. We will put your statement in the record and we will hear your shortened version. Senator Percy will be here in about 20 minutes, but he did ask us to proceed.

Mr. DEVINE. First of all, let me thank you for the opportunity to appear before this committee to discuss elements of U.S. nonproliferation policy. From the beginning of the nuclear age, all administrations have been firmly committed to the goal of preventing the spread of nuclear explosives. While detailed policy approaches have varied, the last eight Presidents have recognized the critical relationship between nonproliferation and U.S. security interests. That recognition is at the core of President Reagan's policy.

In preparing for this appearance, your staff asked that I address the policy to restore the United States as a reliable nuclear supplier. I would note at the outset that merely announcing an intent to adhere to a policy of reliability does not make one reliable in the eyes of our trading partners.

Unfortunately, although it is easy to demolish a reputation quickly, restoring a broadly shared perception that the United States will act

sensibly and predictably in its nuclear relations cannot be accomplished overnight. That requires a uniform course of conduct extending not only over weeks or months, but over years. In that sense, we are only beginning our effort. However, I would like to say a few things about this policy to redress some of the misunderstandings and misrepresentations which have attended the initiative.

First, the reliability of supply policy extends to those nations who share our basic nonproliferation objectives. There is a linkage here between U.S. nuclear supply and adherence by our trading partners to firm nonproliferation commitments. Those who undertake these commitments should have the benefit of a predictable and assured source of U.S. nuclear supply. Those who will not supply such assurances will not receive those benefits.

Second, an important way in which we have attempted to stabilize and improve our reliability is the administration's decision not to seek changes in the basic statutory framework for our nuclear commerce. Although there are aspects of the 1978 Nuclear Non-Proliferation Act [NNPA] which might have been amended to be more consistent with the administration's views, we decided not to seek such changes, feeling that a disruptive legislative debate over the NNPA would cause further doubt on the constancy of our national policy.

However, we are now regrettably faced with damaging proposals to change the statute emanating from the House of Representatives. If enacted, these amendments will not only be harmful in themselves, but would be viewed by other nations as evidence that the U.S. nuclear export process is capricious and unpredictable.

Therefore, I would urge the Senate to reject such proposals if they should be brought forward for your consideration.

Third, we are receiving positive reactions from other nations as to what they regard as a less confrontational and more cooperative approach on the part of the United States to nuclear issues. With the support of the Congress, we hope to build on this growing spirit of cooperation to advance the nonproliferation goals that we all share. In matters of nonproliferation, just as in every other aspect of foreign policy, concrete distinctions sometimes have to be made among the various nations of the world. President Reagan has stated that the United States will not inhibit civil reprocessing and breeder development in countries with advanced nuclear programs where it is not a proliferation risk.

Consistent with this position, the President approved in June a modified and limited approach toward the reprocessing of material subject to U.S. consent rights and the use of plutonium derived from that material. This approach is designed to give our close allies and nuclear trading partners a firmer and more predictable basis upon which to plan their vital energy programs while at the same time furthering our nonproliferation objectives, including strengthened controls over civil plutonium.

Specifically, we are now offering Japan and the countries of EURATOM new long-term arrangements for the implementation of U.S. consent rights over the reprocessing and use of material subject to our agreement for peaceful nuclear cooperation. This advance, long-term approval would apply only for facilities and activities which we determine meet our strict statutory criteria. These offers are being

made in the context of seeking new or amended peaceful nuclear cooperation agreements, which would be subject to congressional review.

The approvals would be valid only as long as the conditions provided in the agreement, including nonproliferation and statutory conditions, continued to be met. Our willingness to take these steps presumed the continued strong commitment of these countries to our common nonproliferation efforts, and to developing and implementing more effective controls over plutonium.

Providing advance consent will not open the floodgates to the widespread use of plutonium. We are proposing this arrangement only to those few nations which have well-defined and coherent advanced nuclear programs, and where reprocessing and plutonium use do not constitute a proliferation danger.

Moreover, these countries already have reprocessing technology as well as active research development and demonstration programs for advanced nuclear fuel cycles using plutonium. They already possess sizable quantities of separated plutonium. Our policy does not endorse or encourage the spread of reprocessing and plutonium, but recognizes that major programs already exist, and that we must work realistically with our most important allies to ensure vigorous safeguards and controls over sensitive technology and materials.

It is not the radical departure from past practice which uniformed critics have charged. During the past two administrations, requests for reprocessing were approved on a case by case basis. Past approvals have included primarily reprocessing in Japan at Tokai Mura or the shipment of spent fuel from Japan and a few other countries to France and the United Kingdom for reprocessing. Both previous administrations and this administration have always approved such requests.

Such cooperation from the advanced nuclear countries is essential if we are to succeed in strengthening the nonproliferation regime.

I would like now to turn to events at the IAEA General Conference in Vienna last week. Let me begin by reading parts of the statement delivered by Deputy Secretary Davis of the Department of Energy, the leader of the U.S. delegation to the IAEA's General Conference on September 24, just prior to the U.S. walkout. It is a brief but comprehensive summary of our reaction to the illegal rejection of Israel's credentials.

The United States Government voted to accept the credentials of the Israeli delegation to the IAEA General Conference because they were properly presented under the criteria of the statutes and rules of procedure of the General Conference. I cannot overemphasize the damage that has been done to the integrity of the IAEA and the whole U.N. system by this vote today to illegally reject the credentials of the Israeli delegation to the General Conference. It totally ignores the strictly procedural mandate given to us to determine whether the credentials have been signed by the head of state or government or minister of foreign affairs of a duly constituted government of a member state in good standing.

Second, it blatantly introduces into this procedure strictly political issues, issues that can have no proper place in this technical agency with specialized responsibilities. This is a very painful moment for me, because the United States has for over 20 years been committed to support and strengthen the IAEA and its program. However, the degree to which the IAEA has now become politicized as evidenced by the resolution just adopted is completely unacceptable to my Government.

This is an agency which was founded as a technical body to make the benefits of peaceful nuclear energy available to all under safeguards which would reas-

sure the world as to the peaceful use of that energy. Instead, it has become a forum for debating political issues. The pattern of abusing the U.N. system to carry on political vendettas is corrosively dangerous. The politicization of the specialized international organizations such as the IAEA must cease.

In these circumstances, the United States delegation must now withdraw from this General Conference. I further have to advise you that the Government of the United States will now reassess its policy regarding U.S. participation in the IAEA and its activities. I can assure that these decisions have not been taken lightly. We are not prepared, however, to stand idly by where legal principles are sacrificed for political expediency.

That is the end of Secretary Davis' quote.

I want to emphasize that the action of rejecting Israel's credentials applied only to that meeting. Israel's membership is not suspended. On the contrary, it can continue to participate in all Agency activities and meetings, including next year's General Conference. Of course, Iraq or any other country could choose to challenge Israel's or any other member's credentials at that time. If that should happen, we will make every effort, as we did this year, to defeat it. In the meantime, we will make it very clear to the 110 member states as well as to the Agency itself that the United States will not condone such blatantly political actions that should have no place in a technical agency.

The reassessment announced by Deputy Secretary Davis has begun. We will study the entire range of options, not excluding withdrawal. We will also look at reducing our funding and other support for Agency activities, reducing our participation in IAEA-sponsored meetings, symposia, conferences, et cetera, and what actions might be taken against those specific members responsible for what happened last week.

While I cannot promise a target date for the completion of this reassessment, I can promise that the study will be done as quickly as practicable. We will carefully weigh the potential effect on our nonproliferation policy in which the IAEA plays such an important role against the potential snowballing effect of illegal actions against the principle of universality in the U.N. system.

While the reassessment is underway, the United States will reduce the level of its participation in Agency activities, but will attempt to insure that its safeguards-related functions do not suffer, given the importance safeguards have to the national security of the United States. But the politicization of the IAEA will certainly decrease its ability to apply efficient and effective safeguards.

We are determined to prevent this politicization from continuing to the detriment of the IAEA's safeguard system. Our actions at the General Conference are the first step in our campaign to reverse this trend. At the same time we are reassessing our policy toward the IAEA, we are continuing our efforts to strengthen the IAEA safeguards. While the technical effectiveness of IAEA safeguards has improved steadily over the recent past, it still is more uneven than we would wish.

We are working both bilaterally, in cooperation with the IAEA Secretariat, and multilaterally, through a number of special projects to improve IAEA safeguards. Several of these efforts focus on the particular problem of safeguarding sensitive nuclear facilities.

The United States is currently engaged in a multinational exercise to define effective safeguard approaches for gas centrifuge enrichment

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plants. In addition to the United States, Australia, Japan, and the URENKO governments and the safeguards inspectorates of EURATOM and the IAEA participate in this project, called the Hexapartite Safeguards Project. All six countries now have or plan to have gas centrifuge enrichment facilities under IAEA safeguards.

Much progress has been made, but there are still problems remaining to be solved, such as the frequency of access by inspectors. We hope to be able to announce the successful conclusion of this project at the February meeting of the Board of Governors.

We are also continuing our work on reprocessing plant safeguards. The Tokai Advanced Safeguards Technology Exercise [TASTEX], was successfully concluded about 1 year ago. Since then, instruments and techniques developed through TASTEX are gaining acceptance internationally. Work on safeguards techniques also is being conducted at the Barnwell facility. We are continuing our efforts to have the new techniques and equipment incorporated into IAEA safeguards approaches for reprocessing facilities.

Another area in which the administration has recently taken action in support of our nonproliferation policy involves tightening of administrative controls over nuclear technology transfers. On September 17, revisions to these regulations were published in the Federal Register by the Department of Energy. Exports of sensitive nuclear technology are subject to stringent controls under the Atomic Energy Act and under the nuclear suppliers' guidelines. Activities not involving technology sensitive from the point of view of proliferation, are generally authorized for the free world.

Any retransfer by a foreign licensee or other entity of a U.S. company of sensitive nuclear technology would require specific Government approval. Until the recent changes, the export of reactor technology by a U.S. firm to a foreign licensee would have been authorized to all but certain embargoed destinations, generally COCOM countries. Now this list has been expanded to include nations which have not ratified the NPT [Non-Proliferation Treaty] or accepted full scope safeguards.

Four countries in unstable regions, Iran, Iraq, Libya, and Syria, have also been listed, even though they are NPT signatories. In the latter case, specific authorization again is needed before such nonsensitive technology can be exported. We believe this revision will provide us with a prior opportunity to review technology exports and is consistent with our efforts to provide an incentive for countries to ratify the NPT or accept full scope safeguards.

It also meets concerns which have been expressed that general authorizations might permit the export of reactor technology to a country of significant proliferation concern.

We also have continued the U.S. program to reduce or eliminate the need for highly enriched uranium in research reactor programs, and we have been working very closely with the principal nuclear supplier states to assure that nuclear trade is subject to effective conditions and controls.

A so-called trigger list was established by parties to the NPT in order to carry out their obligations under article 3 of the treaty. The London Supplier Guidelines established an expanded trigger list to include exports of sensitive nuclear technology. These lists have been generally effective in assuring that significant nuclear exports are not

being made to unsafeguarded programs. However, many items on the list are quite general, and there is a need to clarify and make more precise what particular equipment belongs on these lists.

Moreover, certain dual use items which do not fall on any list should be subject to export controls to assure that they only go to safeguarded nuclear facilities. We have taken important initiatives on both these fronts.

Another area in which we have taken action is promoting more widespread acceptance of full scope safeguards. The Nuclear Nonproliferation Act requires that nonnuclear weapon states have all their peaceful nuclear facilities under IAEA safeguards as a condition of U.S. nuclear exports. In addition, the President's nonproliferation message of last July stated that we would continue to urge other suppliers to require full scope safeguards as a condition of any significant new supply.

Thus, this administration has taken the initiative on a number of fronts to strengthen the international nonproliferation regime. This sometimes is overlooked because little publicity has been given to these efforts, but if we are to realize our shared nonproliferation goals, we also need, Mr. Chairman, to restore and nurture that basic spirit of bipartisan cooperation to which President Reagan referred, rather than engaging in contentious dispute. The executive branch and the Congress must work together.

To that end, I reaffirm our readiness to consult closely with you on the critical issues and choices that lie ahead. Above all, a spirit of restored cooperation in the nuclear realm is required with other countries. A unilateral approach which too readily overlooks the particular energy needs, security perspectives, and domestic political requirements of other countries, makes our common task more difficult. We cannot dictate to other countries. We must convince them of the desirability and benefits of cooperating with us to insure that the peaceful use of nuclear energy does not lead to further nuclear explosives proliferation.

Here, too, failure to work together can only lead to a broader failure of our nonproliferation policies.

Thank you, Mr. Chairman, and I would welcome your questions.

[Mr. Devine's prepared statement follows:]

PREPARED STATEMENT OF JAMES B. DEVINE

Mr. Chairman: Thank you for the opportunity to appear before this Committee to discuss elements of U.S. non-proliferation policy.

From the beginning of the nuclear age, all administrations have been firmly committed to the goal of preventing the spread of nuclear explosives. While detailed policy approaches have varied, the last eight Presidents have recognized the critical relationship between non-proliferation and U.S. security interests. That recognition is at the core of President Reagan's policy.

Equally basic to our non-proliferation policy, and to the non-proliferation regime itself, is this Administration's conviction that nuclear energy, in the United States and around the world, has a vital role to play over the next decades in providing environmentally safe and economically efficient power for home and industry. This conviction is shared by many other nations. All see reliance on nuclear power as helping them meet an important part of their energy needs.

Consistent with our non-proliferation objectives, we are seeking ways to enable our nuclear industry to participate vigorously in these developments. As President Reagan observed in his July 16 statement, "The United States will cooperate with other nations in the peaceful uses of nuclear energy . . . To carry out

these policies. I am instructing the Secretary of State, working with the other responsible agencies, to give priority attention to efforts . . . to re-establish a leadership role for the United States in international nuclear affairs."

Your staff has asked that I address this policy to restore the United States as a reliable nuclear supplier. I would note at the outset that merely announcing an intent to adhere to a policy of "reliability," does not make one reliable in the eyes of our trading partners. Unfortunately, although it is easy to demolish a reputation quickly, restoring a broadly shared perception that the United States will act sensibly and predictably in its nuclear relations cannot be accomplished overnight. That requires a uniform course of conduct extending, not over weeks or months, but over years. In that sense, we are only beginning our effort. However, I would like to say a few things about this policy, to redress some of the misunderstandings and misrepresentations which have attended the initiative.

First, the reliability of supply policy extends to those nations which share our basic non-proliferation objectives. There is a linkage here between U.S. nuclear supply and adherence by our trading partners to firm non-proliferation commitments. Those who undertake these commitments should have the benefit of a predictable and assured source of U.S. nuclear supply. Those who will not provide such assurances will not receive those benefits.

Second, an important way in which we have attempted to stabilize and improve our reliability is the Administration's decision not to seek changes in the basic statutory framework for our nuclear commerce. Although there are aspects of the 1978 Nuclear Nonproliferation Act which might have been amended to be more consistent with the Administration's views, we decided *not* to seek such changes, feeling that a disruptive legislative debate over the NNPA would cause further doubt on the constancy of our national policy. However, we are now regrettably faced with damaging proposals to change the statute emanating from the other body. If enacted, these amendments would not only be harmful in themselves, but would be viewed by other nations as evidence that the U.S. nuclear export process was capricious and unpredictable. Therefore, I would urge the Senate to reject such proposals, if they should be brought forward for your consideration. Congress cannot, by itself, make the United States a reliable nuclear supplier; however, it can defeat such a policy by continuing to propose legislative changes in our export system. Third, we are receiving positive reactions from other nations to what they regard as a less confrontational, more cooperative approach to nuclear issues. For example, at this year's Uranium Institute meeting in London in early September, a representative of the French CEA (that nation's nuclear agency) noted the U.S. policy as a positive development, stating that: "most governments now understand that the most efficient developments are not necessarily the most spectacular, and that the first prerequisite for an effective non-proliferation policy is a real worldwide consensus, rather than attempts to dictate new rules through unilateral decisions." With the support of Congress, we hope to build on this growing spirit of cooperation, to advance the non-proliferation goals we all share.

At the same time, with more and more nations embarking on civilian nuclear power programs, it is essential that the United States and other countries adopt policies that insure that the legitimate development of nuclear power is not accompanied by the spread of nuclear explosives. We will not compromise our non-proliferation principles in pursuit of commercial gain, and will continue to ask the same from others.

In matters of non-proliferation, just as in every other aspect of foreign policy, concrete distinctions sometimes have to be made among the various countries of the world. President Reagan has stated that the United States will not inhibit civil reprocessing and breeder development in countries with advanced nuclear programs where it is not a proliferation risk.

Consistent with this position the President approved in June a modified and limited approach toward the reprocessing of material subject to U.S. consent rights and the use of plutonium derived from that material. This approach is designed to give our close allies and nuclear trading partners a firmer and more predictable basis upon which to plan their vital energy programs while at the same time furthering our non-proliferation objectives including strengthened controls over civil plutonium.

Specifically, we are offering Japan and the countries of EURATOM new, long-term arrangements for implementation of U.S. consent rights over the reprocessing and use of material subject to our agreement for peaceful nuclear cooperation. This advance, long-term approval would apply only for facilities and activities which we determine meet our strict statutory criteria.

These offers are being made in the context of seeking new or amended peaceful nuclear cooperation agreements, which would be subject to congressional review. The approvals would be valid only as long as the conditions provided in the agreement, including nonproliferation and statutory conditions, continue to be met. Our willingness to take these steps presumed the continued strong commitment of these countries to our common nonproliferation efforts and to developing and implementing more effective controls over plutonium.

Providing advance consent will not open the floodgates to the widespread use of plutonium. We are proposing this arrangement only to those few nations which have well defined and coherent, advanced nuclear programs and where reprocessing and plutonium use do not constitute a proliferation danger. Moreover, these countries already have reprocessing technology as well as active research, development and demonstration programs for advanced nuclear fuel cycles using plutonium. They already possess sizable quantities of separated plutonium. Our policy does not endorse or encourage the spread of reprocessing and plutonium, but recognizes that major programs already exist and that we must work realistically with our most important allies to ensure vigorous safeguards and controls over sensitive technology and materials.

It is not the radical departure from past practice which uninformed critics have charged. During the past two administrations requests for reprocessing were approved on a case-by-case basis. Past approvals have involved primarily reprocessing in Japan at Tokai Mura or the shipment of spent fuel from Japan and a few other countries to France and the United Kingdom for reprocessing. Both previous administrations and this administration have always approved such requests.

Such cooperation from the major advanced nuclear countries is essential if we are to succeed in strengthening the nonproliferation regime.

I would like to turn now to events at the IAEA General Conference in Vienna last week. Let me begin by reading parts of the statement delivered by Deputy Secretary Davis, the leader of the U.S. delegation to the IAEA's General Conference, on September 24, just prior to the U.S. walkout. It is a brief but comprehensive summary of our reaction to the illegal rejection of Israel's credentials.

"The United States Government voted to accept the credentials of the Israeli Delegation to the IAEA General Conference because they were properly presented under the criteria of the statutes and rules of procedure of the General Conference.

"I cannot over-emphasize the damage that has been done to the integrity of the IAEA and the whole U.N. system by this vote today to illegally reject the credentials of the Israeli Delegation to the General Conference.

"It totally ignores the strictly procedural mandate given to us to determine whether the credentials have been signed by the head of state or government or minister of foreign affairs of a duly constituted government of a member state in good standing.

"Second, it blatantly introduces into this procedure strictly political issues—issues that can have no proper place in this technical agency with specialized responsibilities.

"This is a very painful moment for me because the United States has for over twenty years been committed to support and strengthen the IAEA and its program. However, the degree to which the IAEA has now become politicized as evidenced by the resolution just adopted is completely unacceptable to my government. This is an agency which was founded as a technical body to make the benefits of peaceful nuclear energy available to all under safeguards which would reassure the world as to the peaceful use of that energy. Instead, it has become a forum for debating political issues. The pattern of abusing the U.N. system to carry on political vendettas is corrosively dangerous. The politicization of specialized international organizations such as the IAEA must cease.

"In these circumstances, the United States Delegation must now withdraw from this General Conference. I further have to advise you that the Government of the United States will now reassess its policy regarding U.S. participation in the IAEA and its activities.

"I can assure that these decisions have not been taken lightly. We are not prepared, however, to stand idly by where legal principles are sacrificed for political expediency."

I want to emphasize that the action of rejecting Israel's credentials applied only to that meeting. Israel's membership is not suspended; on the contrary, it can continue to participate in all Agency activities and meetings including next year's General Conference. Of course, Iraq or any other country could choose to

challenge Israel's or any other member's credentials at that time. If that should happen, we will make every effort, as we did this year, to defeat it. In the meantime, we will make it very clear to the 110 member states, as well as to the Agency itself, that the United States will not condone such blatantly political actions that should have no place in a technical agency.

The reassessment announced by Deputy Secretary Davis has begun. We will study the entire range of options, not excluding withdrawal.

We will also look at reducing our funding and other support for agency activities, reducing our participation in IAEA-sponsored meetings, symposia, conferences, etc., and what actions might be taken against those specific members responsible for what happened last week. While I cannot promise a target date for the completion of this reassessment, I can promise that the study will be done as quickly as practicable.

We will carefully weigh the potential effect on our nonproliferation policy, in which the IAEA plays such an important role, against the principle of universality in the U.N. system. While the reassessment is underway, the United States will reduce the level of its participation in Agency activities, but will attempt to ensure that its safeguards-related functions do not suffer, given the importance safeguards are to the national security of the United States. But the politicization of the IAEA will certainly decrease its ability to apply efficient and effective safeguards. We are determined to prevent this politicization from continuing to the detriment of the IAEA's safeguards system. Our actions at the General Conference are the first steps in our campaign to reverse this trend.

At the same time we are reassessing our policy toward the IAEA, we are continuing our efforts to strengthen IAEA safeguards. While the technical effectiveness of IAEA safeguards has improved steadily over the recent past, it still is more uneven than we wish. We are working both bilaterally in cooperation with the IAEA secretariat and multilaterally through a number of special projects to improve IAEA safeguards. Several of these efforts focus on the particular problem of safeguarding sensitive nuclear facilities.

For example, we are working to improve the quality and capabilities of the IAEA's inspectorate. Through courses given at U.S. laboratories and by U.S. experts who go to Vienna solely for this purpose, IAEA inspectors are continuously trained in new techniques and methods designed to enhance the effective and timely application of IAEA safeguards. This effort has so impressed the IAEA that they formed first a training unit, and then a training section to train systematically new inspectors and to keep veteran inspectors up to date.

Similarly, in the area of safeguards instrumentation we have developed explicitly for IAEA use over the past 5 years twenty types of equipment for verification of nuclear material. Some of the equipment is in routine use and most of it is in great demand by the inspectorate. This should lead in the next few years to a significant increase in IAEA capabilities in measurement of uranium and plutonium by nondestructive techniques.

Further, through our program of Technical Assistance to IAEA Safeguards, 213 mutually agreed projects have been completed since its inception in 1977 and another 50 are currently underway at a total cost of $27 million.

Considerable concern has been raised recently about the technical task of safeguarding sensitive enrichment and reprocessing facilities. We recognize the problem, and are taking steps in cooperation with other countries to deal with it.

The United States is currently engaged in a multinational exercise to define effective safeguards approaches for gas centrifuge enrichment plants. In addition to the United States, Australia, Japan, the Urenco Governments (U.K., FRG, Netherlands), and the safeguards inspectorates of EURATOM, and the IAEA participate in this project, called the Hexapartite Safeguards Project. All six countries now have, or plan to have, gas centrifuge enrichment facilities under IAEA safeguards. Much progress has been made, but there still are problems remaining to be solved such as the frequency access by inspectors. We hope to be able to announce the successful conclusion of this project at the February meeting of the Board of Governors.

We also are continuing our work on reprocessing plant safeguards. The Tokai Advanced Safeguards Technology Exercise (TASTEX) was successfully concluded about 1 year ago. Since then, instruments and techniques developed through TASTEX are gaining acceptance internationally. Work on safeguards techniques also is being conducted at the Barnwell Facility. We are continuing our efforts to have the new techniques and equipment incorporated into IAEA

safeguards approaches for reprocessing facilities. Continued work and cooperation will be needed to develop successfully adequate safeguards techniques and equipment for the larger reprocessing plants now in the planning stage.

Another area in which the Administration has recently taken action in support of our non-proliferation policy involves tightening of the administrative controls over nuclear technology transfers. Section 57B of the Atomic Energy Act provides authority for the control of nuclear technology exports by U.S. companies and for control over any retransfer of such technology by their licensees or other recipients of the technology. Current regulations on this subject are contained in Part 810 of Title 10 of the Code of Federal Regulations. On September 17, revisions to these regulations were published in the Federal Register by the Department of Energy. Exports of sensitive nuclear technology are subject to stringent controls under sections 123, 127 and 128 of the Atomic Energy Act, and under the Nuclear Suppliers Guidelines. Activities not involving technology sensitive from the point of view of proliferation are generally authorized for the free world. Any activity by a foreign licensee or other entity of a U.S. company of sensitive nuclear technology would require specific Government approval. Until the recent changes, the export of reactor technology by a U.S. firm to a foreign licensee would have been authorized to all but certain embargoed destinations—generally COCOM countries. Now this list has been expanded to include nations which have not ratified the NPT or accepted fullscope safeguards. Four countries in unstable regions (Iran, Iraq, Libya, and Syria) has also been listed, even though they are NPT signatories. In the latter case, specific authorization again is needed before such non-sensitive technology can be exported.

We believe this revision will provide us with a prior opportunity to review technology exports and is consistent with our efforts to provide an incentive for countries to ratify the NPT or accept fullscope safeguards. It also meets concerns which have been expressed that general authorizations might permit the export of reactor technology to a country of significant proliferation risk.

We also have continued the U.S. program to reduce or eliminate the need for highly enriched uranium in research reactor programs. The United States has had a program in effect for several years aimed at developing fuels for and making the necessary technical conversions to reduce the enrichment level of fuel in research reactors. Other nations have been strong and indeed enthusiastic supporter of this program. However, our objectives cannot be achieved through threats or precipitate actions such as cutting off exports of HEU. Instead, a sound technical program of development and demonstration is needed to convince other countries of the technical feasibility, safety and licensability of reduced enrichment fuels along with the obvious non-proliferation benefits of converting to these fuels. If we continue to pursue this approach in the spirit of cooperation and assistance, I am confident that we will succeed in our efforts to reduce significantly or virtually eliminate the use of HEU in research reactors around the world.

We have been working very closely with the principal supplier states to assure that nuclear trade is subject to effective conditions and controls. We have deliberately avoided highly visible steps such as a formal reconvening of the London Suppliers Group since we do not believe that this would contribute to our shared objective of further strengthening nuclear export controls. The London Supplies Group has been characterized by developing countries as an effort by a cartel of advanced nuclear states to set unilaterally the rules of international nuclear trade, depriving developing countries of needed nuclear technology, preserving the advanced countries' monopoly on such technology, and relegating the developing countries to a position of technological inferiority. Although such charges are groundless, other supplier states are particularly sensitive about avoiding any steps which could be construed as a concerted action on the part of the principal exporting states. By contrast, quiet diplomacy and bilateral discussion are a more effective means of strengthening non-proliferation controls on nuclear exports.

In particular, a so-called Trigger List was established by parties to the Treaty on the Non-Proliferation of Nuclear Explosives (NPT) in order to carry out their obligations under Article III of the Treaty. The London Suppliers Guidelines established an expanded Trigger List to include exports of sensitive nuclear technology. These lists have been generally effective in assuring that significant nuclear exports are not being made to unsafeguarded programs. However, many items on the list are quite general and there is a need to clarify and make more precise what particular equipment belongs on these lists. Moreover, certain dual

use items which do not fall on any list should be subject to export controls to assure that they only go to safeguarded nuclear facilities. We have taken important initiatives on both these fronts.

Another area in which we have taken action is promoting more widespread acceptance of fullscope safeguards. The Nuclear Non-Proliferation Act requires that non-nuclear weapons states have all their peaceful nuclear facilities under IAEA safeguards as a condition of U.S. nuclear exports. In addition, the President's non-proliferation message of last July stated that we would continue to urge other suppliers to require fullscope safeguards as a condition of any significant new supply. Though several other nuclear exporters are reluctant to adopt a fullscope safeguards requirement for their exports until all nuclear suppliers do the same, we have been stressing the importance of fullscope safeguards to the non-proliferation regime. This is a difficult and challenging area; but we are hopeful of progress and will continue to use our diplomatic resources to gain wider acceptance of this critical non-proliferation norm.

Finally, President Reagan's July 16th non-proliferation statement made clear that "The United States will view a material violation of (the Treaty of Tlatelolco or the NPT) or an international safeguards agreement as having profound consequences for international order and U.S. bilateral relations, and also view any nuclear explosion by a non-nuclear-weapon state with grave concern." Of course, the U.S. response would have to be tailored to our particular relationship with the country in question. Nevertheless, it is important that we and others make clear that our bilateral relations would be adversely affected in the event of such proliferation actions. We have done so and will continue to do so.

Thus, the Administration has taken the initiative on a number of fronts to strengthen the international non-proliferation regime. This sometimes is overlooked because little publicity has been given to these efforts.

But if we are to realize our shared non-proliferation goals, we also need, Mr. Chairman, to restore and nurture that basic spirit of bipartisan cooperation to which President Reagan referred. Rather than engaging in contentious dispute, the Executive Branch and the Congress must work together. To that end, I reaffirm our readiness to consult closely with you on the critical issues and choices that lie ahead.

Above all, a spirit of restored cooperation in the nuclear realm is required with other countries. A unilateral approach which too readily overlooks the particular energy needs, security perspectives, and domestic political requirements of other countries make our common task more difficult. We cannot dictate to other countries; we must convince them of the desirability and benefits of cooperating with us to ensure that the peaceful use of nuclear energy does not lead to further nuclear explosives proliferation. For here too, failure to work together can only lead to a broader failure of our non-proliferation policies.

Thank you, Mr. Chairman, and I welcome the Committee's questions.

Senator PRESSLER. Thank you very much.

Let me say that although I appreciate the efforts that are being made, as I listen, I realize that we are in a very grim situation in terms of the risks of nuclear proliferation and in terms of what is happening in international organizations such as the breakdown over political arguments of the IAEA General Conference. It seems to me, at least, a very grim situation that is not changing very much. Let me ask you some questions here.

Is it the administration's view that being a reliable and competitive nuclear supplier is the best way to prevent the spread of nuclear weapons?

Mr. DEVINE. That is certainly one of the elements of our nonproliferation policy. Yes, sir.

Senator PRESSLER. How does that work? Is the idea that if we supply it, we will be able to control it?

Mr. DEVINE. I do not think control is the right word. Certainly we believe that by supplying, by entering into cooperative nuclear relations with countries, we can influence their nuclear programs, and in

many instances perhaps head them off from moving in directions that present a proliferation risk.

Senator PRESSLER. As I understand it, the last administration had a restrictive approach on nuclear technology, but this administration has a more permissive approach. What leverage do we gain through this new approach that the last administration did not have?

Mr. DEVINE. Before I answer you directly, let me pick up on a couple of points that you made at the outset. First, you indicated that this administration had departed from the previous administration in two major respects. First, that we were opening the floodgates to plutonium use, and second, that we had reversed the previous administration's policy on dual use items. I think it fair to say, and I would let Joe Nye speak for himself on this, as he will follow me here today, that the previous administration was moving in the direction of granting long-term approvals for reprocessing.

Indeed, the Tokai Mura agreement of 1977 and subsequent ones are indicative of this. So I think with respect to reprocessing there is not that great a difference between the two administrations.

Second, with respect to dual use items, again, we look at each case that comes before us on a case-by-case basis, and make judgments about whether or not the particular item will present a proliferation risk. These are precisely the procedures that were followed in the previous administration, and indeed, many of the things that we were criticized for exporting, such as tunable diode lasers, for example, were exported since 1977.

Now, with respect to the question of leverage, I think one important area where we believe it important that the United States be involved is in the matter of safeguarding new sensitive facilities, particularly large-scale commercial reprocessing plants. We believe that by being involved in the construction of these plants, we can influence their design so as to facilitate the implementation of IAEA safeguards.

I think this will be critical, because as we go down the road toward development of these plants—and indeed, they will be built with or without U.S. support, with our involvement—I think the safeguards regime will be better because of our participation.

Senator PRESSLER. So the feeling is that these things would be built, that we really do not have an option, that if we do not supply it somebody else will. Many fear that the new policy simply means active selling of sensitive nuclear equipment, materials, and technology with few meaningful controls.

For example, if we were to sell to South Africa, as I believe we are, a combination of certain computer capabilities, certain materials, combined with certain other technology that could conceivably be used to make a bomb, we really do not have the capability, I understand it, in the intelligence community to know whether they are or are not diverting these exports until it is pretty far along or until after something is exploded.

How do you answer that concern?

Mr. DEVINE. I think we have to differentiate between sensitive technology and nonsensitive technology. When we talk about indicating a willingness to export, for example, reprocessing technology, we are talking only about a very small group of nations; namely, Japan and

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the members of EURATOM, nations that indeed have this technology already and have advanced nuclear programs.

Our policy is confined solely to that group of countries when we talk about sensitive technology. Now, with respect to various exports to South Africa and other nations, let me emphasize that none of these exports have involved sensitive nuclear technology. We have assured ourselves of that.

All of these cases come before the Subgroup of Nuclear Export Control, which has representatives of Defense, ACDA, DOE, NRC, and ourselves. We look at each one of these cases and assure ourselves that the item in question is not sensitive. And in certain cases we seek assurances from the government concerned.

Much has been made of the export of so-called helium-3 to South Africa. We have looked at that time and again, and have concluded that it is not sensitive from the point of view of proliferation.

Senator PRESSLER. Which countries would be closest to using materials that we have provided them for building nuclear explosives? Would any of them be capable of doing that today as a result of the materials we have supplied? Argentina and South Africa pop into my mind, are there others?

Mr. DEVINE. I am not aware that any nation which is close to achieving a nuclear explosive capability would be utilizing any U.S.-supplied material.

Senator PRESSLER. I have some additional questions, but I am told there are 6 minutes left on a vote on the Clinch River breeder reactor. So I had better run over there to vote. When Senator Percy gets back he will resume. We were going to try to overlap our appearances here today, but the time is getting close. So I will recess the hearing for just a few minutes. Senator Percy will be back and I will be back also.

[Recess.]

The CHAIRMAN [presiding]. Mr. Devine, would you advise the Chair as to whether you have completed your testimony?

Mr. DEVINE. Yes, I have.

The CHAIRMAN. You have? Thank you very much.

I would first like to express a concern that I have had and that I share with a great many people, of the prospect of hundreds of tons of plutonium which could soon enter international commerce. Any plutonium shipments, especially if it were a large quantity, would be inviting targets for terrorists.

What steps is the Department of State taking to assure that adequate physical security measures are applied to plutonium shipments for which the United States has some leverage or control?

Mr. DEVINE. This is a matter of great concern to us as well, because before we can approve any retransfer involving plutonium we must be satisfied that the physical security is adequate. Indeed, this is one of the statutory requirements.

We are working very closely in one particular case with Japan, because there is a large plutonium shipment that is scheduled to be made in the early part of next year, to insure that the security is in fact adequate. In this connection, we are working closely with the Department of Defense, which has had a great deal of experience in this area.

The plan for this particular shipment is not yet developed, but I can assure you now that before U.S. approval would be given to its retransfer we would have satisfied ourselves that the security will be adequate.

The CHAIRMAN. In the past, the United States has worked with other industrial nations that supply nuclear technology to cut down on exports of items that could be used in a nuclear weapons program. In view of last week's events at the IAEA, this may be a particularly good time to consult with other supplier nations to strengthen export requirements and safeguards.

What is your own judgment as to the timing, as to whether it is right for new bilateral and multilateral efforts along these lines?

Mr. DEVINE. Well, even before the events of last week, Mr. Chairman, we have been consulting with other major suppliers in an effort to upgrade the controls on nuclear exports. This is a matter of very high priority as far as we are concerned, and we will continue this effort.

Again, in the area of safeguards, we have been working with the IAEA and with other nations in a variety of different areas to improve safeguards. We recognize that there are deficiencies and are working to remedy them. I think that the events of last week would provide an opportune time to perhaps increase our efforts in the safeguards area in particular.

The CHAIRMAN. Thank you.

Earlier this year, I released a study by the Congressional Research Service indicating that Argentina could develop a nuclear weapons capability in just a few years. Argentina, of course, is a particular source of concern because it has not ratified the NPT. Since that time, the head of Argentina's nuclear program has spoken openly about the possibility that they might develop nuclear technology for military purposes.

In spite of this, the United States has been willing to approve export of control equipment for a heavy water plant in Argentina now being assembled in Switzerland. Do you think that the United States should take stronger measures to limit exports of nuclear technology to nations like Argentina that are openly reserving the nuclear weapons option?

Then could you also comment, while you are on the subject, about the same situation as it relates to South Africa?

Mr. DEVINE. I think the reference by the head of the Argentine nuclear program was to the possibility of constructing nuclear-powered submarines. They have made much of the fact that in the Falklands conflict, the United Kingdom flotilla included nuclear-powered submarines, which is not precluded by the NPT. So I think that was his reference.

But aside from that, the control equipment that you referred to was approved well over a year ago, long before the Falklands conflict. At the time the judgment was that it was a nonsensitive system, it was for a safeguarded facility and it was available elsewhere. Speaking personally, I think were that case to come before us today it probably would not be approved.

On the matter of strengthening measures, as I indicated in my statement, we have taken action with respect to the so-called part 810 to

provide for governmental review of technology exports to countries that have not ratified the NPT. This would include, of course, Argentina and South Africa.

With respect to your final question, we have looked at all South African proposed exports very carefully. I discussed helium-3 a little bit earlier.

The CHAIRMAN. I would like to look at this general area of how effective we are in modifying or affecting foreign policy of a sovereign nation with actions that we take here. I do this in the light of just having come from a meeting of Senators where we were questioning the effectiveness of, say, our whole embargo program on agricultural products, equipment and so on. Has that really ever affected the foreign policy of a foreign government?

I question this in light of the fact that a member of this committee, also a member with me of the Governmental Affairs Committee, offered with me the Nuclear Non-Proliferation Act. It was passed a few years ago and is now law. It provides for a cutoff of nuclear material to countries that have not done certain things, and that caused, obviously, the interruption in our supply of fuel for Tarapur.

At the time we said, look, it may not be perfect, we are just trying it, we want to see what effect it has while we do have this leverage, should we use it or not. But at the time we said, we are just open for suggestions and ideas as to better and more effective ways. We all agree on the goal, that it is desirable to stop the proliferation of nuclear weapons capability.

I wonder, with that background, could you cite examples where being a reliable supplier in nuclear materials, technology, and equipment, which is the policy of the Reagan administration, has provided leverage on nuclear nonproliferation with, first, other suppliers, and second, nuclear importing states?

Mr. DEVINE. I think certainly the success we had in negotiating the London suppliers guidelines in the midseventies reflected our occupying a major role as a supplier. Beyond that, there certainly have been instances, which I cannot go into in open session, where the fact that we were a supplier gave us great influence over the direction of particular nations' nuclear programs. But I would prefer not to discuss them in open session.

The CHAIRMAN. I am not sure if I understood; are there specific examples?

Mr. DEVINE. Yes, sir, there are.

The CHAIRMAN. Are there any that you could give us right now?

Mr. DEVINE. I think it prudent that I provide a classified answer to your question.

The CHAIRMAN. All right, fine. If you would submit that for the record under proper classification, we would appreciate it.

[The information referred to is classified and is being retained in committee files.]

The CHAIRMAN. Last year, in the wake of the Israeli attack on Iraq's nuclear facilities, the IAEA was criticized for being ineffective in detecting a diversion of nuclear materials. Do you agree with this assessment?

Mr. DEVINE. No. I think that the Iraqi case certainly evinced no problems with respect to the application of IAEA safeguards. Indeed,

the facility had not yet even begun operating, so the question of safeguards was irrelevant.

Now, with respect to IAEA safeguards effectiveness generally, there are problems. We acknowledge them, and again we are working with the Agency and with other nations to remedy them.

The CHAIRMAN. Have efforts been made to improve the IAEA safeguards regime?

Mr. DEVINE. Yes. We have underway POTAS program where we are developing for the IAEA various equipment which would improve safeguards. We have worked jointly with the Japanese since 1977 on the TASTEX program, which is designed to improve the ability of the Agency to apply safeguards to reprocessing plants.

We are also working with those nations that are embarked on centrifuge enrichment projects to devise means by which the Agency can adequately safeguard such facilities. So there are actions ongoing in a variety of different areas.

The CHAIRMAN. How do you characterize the administration's approach to nuclear nonproliferation in contrast with previous administrations? Some have characterized it as a break with other administrations. Some have characterized it as just an evolutionary change in approach from past administrations.

Having worked with it as closely as you have and knowing intimately the policy of past administrations, how do you characterize the administration and its position?

I might say that the vote that is going on right now is on the Clinch River breeder reactor, appropriately timed for this morning. [Laughter.]

Mr. DEVINE. I will confine my remarks to the international scene. I think the first point to be made is that the foundation of our nonproliferation policy is the NNPA. Both administrations have operated within the framework of the statute, and that sets forth probably 95 percent of what our policy has been and continues to be. In other words, there is very little margin for divergence from one administration to the other here.

But even in that 5-percent area, I think there has not been a marked departure, except perhaps in a couple of areas. I think there is a greater disposition on the part of this administration to accept the judgments of other nations with regard to what their energy and security needs are.

This is reflected in the plutonium use policy, in that Japan and the EURATOM countries are embarking, with or without our cooperation, toward reprocessing and plutonium use. That is one area.

I think a second area where there is a divergence from the previous administration is the fact that we do make rational distinctions among nations. "Discrimination" might be another word for it. I think the general approach of the previous administration was not to draw such distinctions.

So I think in those two areas perhaps the major differences exist.

The CHAIRMAN. Is there in your judgment a danger that U.S. leverage will end once a potential nuclear proliferator no longer requires American nuclear assistance, and that being a reliable supplier will undermine nonproliferation goals in the long run?

Mr. DEVINE. Well, as I indicated to an earlier question, I am not aware of any instance where a nation that is close to achieving a nuclear weapons capability today would utilize U.S. material. The problems that exist are those where nations are embarked on indigenous programs outside the international safeguards regime.

The matter of reliability of supply perhaps is overemphasized here, I think. That is one element of our policy, but it is by no means the only one.

The CHAIRMAN. How important in your judgment is the IAEA's safeguard program to the goal of preventing nuclear weapons spread?

Mr. DEVINE. I think it is absolutely critical. I cannot conceive of us going back to bilateral safeguards. Without such safeguards, it would be a total disaster for our nonproliferation policy and for international nuclear commerce.

The CHAIRMAN. I would like to comment, as you did in your statement today—and your statement with respect to the integrity of the IAEA is an important statement. I would first like to ask you about that, and the rejection of Israel's credentials to IAEA's General Conference last Friday did seem to signal the attempted politicization of this important organization.

You obviously disagree with this assessment. What do we propose to do to protect the impartiality and the independence of the Agency?

Mr. DEVINE. We hope that the actions that we took in Vienna and whatever comes out of the reappraisal that we are embarking on will send a signal to those who wish to continue to politicize the Agency. I recall just 5 years ago talking about the Agency and saying that it was the U.N. Agency least affected by political events. That unfortunately no longer is true.

So we hope the strong action that we took and will be taking in the days and weeks ahead, will have the desired effect.

The CHAIRMAN. Do you believe that the American walkout from the IAEA could provide other nations with an excuse to avoid participation in IAEA activities, including safeguards?

Mr. DEVINE. No, sir. I see no relationship between the two.

The CHAIRMAN. Is there any alternative, in your judgment, to the safeguards structure provided by the IAEA, taking into account that you have rightfully supported it strongly as the best hope we have? But are there any other alternatives?

Mr. DEVINE. Conceptually there are, but realistically I judge not.

The CHAIRMAN. I am sorry, I did not hear you.

Mr. DEVINE. I say conceptually one might envision going back to the safeguards system that prevailed in the fifties and the early sixties; namely, that the United States would send over inspectors and the like. But I do not see that as a realistic alternative. So I think that in effect there is no alternative to the IAEA safeguards system.

The CHAIRMAN. I notice that Senator Pressler commented in his opening statement on this action in the General Conference and that you have emphasized the damage that is being taken on by IAEA and the whole U.N. system by the vote last Friday. I would just like to add my voice to that, as a strong supporter of IAEA through the years.

I think it would be just incredible if we continue to politicize this particular committee. I think it is bad to politicize any of the U.N. committees. Membership in the United Nations is available to countries that adhere to the charter, but also you do not expel members just because they have broken the rules or gone against some particular provision. Otherwise you would have expelled a great many countries in the meantime, a great many.

And to select and pick out Israel for its actions, when Israel alone has been more critical, its press, its public in public life, its public, over the actions taken by the Begin-Sharon government than any other country, even in the press in this country—demonstrated and proven it is a free nation, it is a great democratic nation, and it is taking care of its own problems.

And it has forced its own government to assume the most wide-sweeping investigation and powerful investigation they can possibly set up. The integrity of that investigation I do not think is subject to question, and it will come down with the facts.

But for the IAEA to politicize its activities I think is just unconscionable, really, and really undercuts and undermines—the nations who participated really are undermining one of the most important single things mankind can do to preserve and protect the human race, and allowed politics to intervene.

I would just like to add my voice to yours, the administration's, to Senator Pressler's excellent opening statement in that regard.

Senator Pressler has apparently been detained on the floor. This vote is still being held open for some strange reason.

Mr. DEVINE. Sounds like the IAEA meeting last week. [Laughter.]

The CHAIRMAN. I hear the buzzer. There it goes. It is off now. Perhaps he will be back shortly.

I think, though, that we had best call the next panel to the witness table. If you would not mind standing by, Senator Pressler may wish to ask some additional questions of you.

I would call now the public panel to the witness table. We will hear from Nunzio Palladino, Chairman of the Nuclear Regulatory Commission; our old friend, Dr. Joseph Nye of the John F. Kennedy School of Government at Harvard University; Manning Muntzing, president of the American Nuclear Society; and Paul Leventhal, a long-time friend and colleague at the Nuclear Control Institute, Washington, D.C. [Pause.]

Chairman Palladino, why do we not begin with you?

STATEMENT OF NUNZIO PALLADINO, CHAIRMAN, NUCLEAR REGULATORY COMMISSION, ACCOMPANIED BY JAMES SHEA, DIRECTOR, OFFICE OF INTERNATIONAL PROGRAMS, NRC

Mr. PALLADINO. Thank you, Mr. Chairman. I would like to introduce Mr. James Shea, Director of the Office of International Programs at the NRC, who is sitting on my right.

I appreciate this opportunity to be here today to discuss U.S. nuclear nonproliferation policy. As you know, the NRC contributes to

the implementation of U.S. nonproliferation policy in carrying out its statutory responsibilities under the Nuclear Non-Proliferation Act of 1978, commonly known as the NNPA.

For example, in order to provide additional monitoring capability over U.S. nuclear exports and export-related activities, the Congress assigned to NRC in the NNPA the role of being involved in reviewing U.S. Government actions in areas of international nuclear commerce. We work closely with the executive branch and provide our views on whether individual actions conform with existing executive branch policy guidelines.

It is my judgment that through these means NRC has performed a useful function in assuring that the spirit as well as the letter of the NNPA is properly implemented in the U.S. Government's case-by-case nuclear export decisions. Also, in certain key areas, such as safeguards and physical security, NRC provides technical assistance.

In general, the Commission believes that the implementation of U.S. nonproliferation policy has proceeded as set forth in the NNPA. Interagency review and coordination procedures are working to enable export cases and serious proliferation concerns to be considered before determinations are made.

Particularly significant in this regard is the intelligence information provided to the Commission. This has enabled attention to be focused on proliferation-sensitive developments abroad.

Legislation has recently been introduced to amend portions of the NNPA pertaining to such activities as highly enriched uranium exports and the export of reprocessing technology. The Commission has concluded from its perspective that no major changes to the NNPA are necessary.

This is not to say that certain improvements are not desirable. For example, the act could be made more specific regarding the Commission's consideration of the adequacy of the International Atomic Energy Agency safeguards when making export licensing determinations. In general, however, the NNPA as currently written provides a reasonable basis for pursuing U.S. nonproliferation objectives.

The Commission fully supports and encourages efforts to improve controls on sensitive nuclear exports, to reduce the use of highly enriched uranium fuel in research reactors, and to restrict all significant U.S. nuclear exports to those nonnuclear weapons states which have not ratified the Nuclear Non-Proliferation Treaty or accepted full-scope safeguards.

The above U.S. objectives and concerns are, of course, not new. However, they remain as pertinent today as they were 4 years ago when the NNPA was enacted. The key consideration in all of these matters is to continue to focus the efforts of all involved agencies toward achieving these important nonproliferation objectives.

The NRC remains concerned about the potentially disastrous effects of the proliferation of nuclear explosives capabilities. Accordingly, the Commission will continue to work with the executive branch and the Congress in the most effective manner possible to guard against such an occurrence.

For example, the Commission is concerned about the need to improve the IAEA's safeguards program and in particular safeguards tech-

niques for sensitive nuclear facilities such as reprocessing or enrichment plants. We are working with the executive branch in pursuing improvements.

This concludes my prepared testimony. I would be pleased to address any questions that you might have.

The CHAIRMAN. Thank you very much.

Senator Pressler, I wonder if I could ask you to continue to chair this hearing. Regretfully, I must leave for Chicago this afternoon and I have to get two amendments into our bill. Regretfully, I must prepare those, and hopefully I can return before the meeting adjourns. If not, I will certainly read the testimony.

And I want to welcome again our good friends who have been so helpful to us through the years in helping this committee and each of us as Senators in working on what I consider to be the paramount issue of our time.

Thank you very much.

Senator PRESSLER. We will ask any questions that you might wish to leave with us.

The CHAIRMAN. Thank you very much.

I have completed my questioning of Mr. Devine, who is standing by. He would be happy to resume the witness table if you or Senator Glenn wish to submit any additional questions to him.

Senator PRESSLER [presiding]. I call on Dr. Nye for his statement at this time.

STATEMENT OF DR. JOSEPH S. NYE, JR., JOHN F. KENNEDY SCHOOL OF GOVERNMENT, HARVARD UNIVERSITY, CAMBRIDGE, MASS.

Mr. NYE. Thank you, Mr. Chairman. I must say, it is certainly a pleasure to return and testify before old friends, the coauthors of the Nuclear Non-Proliferation Act, and to have a chance to give my views as to what happened since the last time I testified before this committee, which must be about 4 years ago.

I would like to step back from some of the more immediate issues and try to look at the longer perspective of where we are as a nation in our efforts to slow the spread of nuclear weaponry. I explain this at some length in my testimony. I will not read my testimony, but will submit it for the record and will hit a few of the high points.

Senator PRESSLER. Without objection, we will print your testimony in full in the record. We urge you to summarize your statement, as you are going to do, and we will save a lot of time for questions in that way.

Mr. NYE. Thank you.

It is interesting to look back 20 years and see what President John F. Kennedy thought was going to be the world of the 1970's. He expected a world of about 20 nuclear powers. Basically, what is interesting about this 40-year-old technology is not that nuclear weaponry has spread, but that it has not spread more; that we are doing better, if you will, than might be expected or than was expected at that time.

On the other hand, there is a great danger of complacency setting in. And I believe that in the early 1970's there had, in fact, become a rather complacent attitude in our efforts to slow nuclear weaponry. That was shattered in 1974 by the Indian explosion and by the hike in oil prices which gave rise to rather unrealistic expectations about the role of nuclear energy.

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Typical projections of the 1980's were that 30 or 40 countries would be using plutonium fuels by the end of the decade, and there might be as many as eight reactors in a country like Bangladesh.

Quite clearly, the IAEA and the international safeguards system was not up to the ability to safeguard such a rapid growth, and it is not too surprising that the main policy responses of the mid and late 1970's were to try to deal with this threat, this clear and present danger to the international regime of the IAEA and the NPT that had been built up earlier.

Those policy responses were the London Supplier Group and the International Nuclear Fuel Cycle Evaluation, which focused on fuel cycle issues. Some of the most heated debates of the seventies were about fuel cycle issues. I would argue that many of those have now been answered by experience, by economic trends, and by the conclusions of the fuel cycle evaluation.

For example, the argument that no state would find it rational to try to misuse a fuel cycle facility rather than build a dedicated facility has been disproven by at least the Korean and Pakistan experiences. The view that shortages or uranium would require early use of plutonium has succumbed to more realistic economic projections. The view that nuclear energy would provide energy security in the short run has given rise to more realistic analysis that the main threats to energy security in the eighties come from political interruptions of Persian Gulf oil. And the optimistic projections about nuclear energy in developing countries have also been toned down in light of the economic experience.

I would submit that the nonproliferation problems of the eighties, as we look ahead, are more likely to have a political cast and to require political solutions. This does not mean that fuel cycle issues will not be important, but that the fuel cycle is only one of six major problems that I foresee.

In this regard, the administration has also said something along these lines, that political instruments are necessary to deal with nonproliferation policy. But political instruments as stressed by the administration tend to be security guarantees, and security guarantees, while they are good where they are credible as a nonproliferation policy instrument, are not always credible.

Many of the most difficult cases, in fact, are outside the range of credible security guarantees. So I think we have to look more carefully at the problems that I am going to identify.

The first is to keep the fuel cycle question in a reasonable perspective. Abolishing nuclear energy or nuclear exports would not solve the nuclear proliferation problem because there are other paths to making a bomb and nuclear supply does provide leverage.

But important steps remain to be taken, such as the improvement of full scope safeguards, arrangements for managing plutonium and highly enriched uranium, and international provisions for spent fuel storage. There is still a serious agenda here.

A second problem is going to be priority. One of the effects of the attention given to proliferation in the late 1970's was to raise the priority of the issue for a number of governments. The Reagan administration's emphasis on East-West conflict has led it to neglect areas

of potential cooperation with the Soviet Union on nonproliferation and to generally lower the priority given to this subject. One is struck by the absence of high-level attention in this administration compared to its predecessors.

Third, even if there is high priority given to nonproliferation, difficult choices will exist in relating the rate and degree of proliferation. As technology spreads and proliferation occurs, we will have to direct more attention to these questions of advanced proliferation. What happens after an explosion? Controls on information about laser fusion devices, technology with advanced weapon uses, space launchers and other delivery systems, will require more systematic analysis.

It is rather ironic to find now in our export controls, you can sell a computer for a space program, which is alleged to be a peaceful space program, but you cannot sell that computer to an atomic research center. In other words, we are not willing to deliver the bomb, but we are helping or willing to help develop the delivery system.

A fourth problem is that there is a problem in the way that the international rules and structures in arms control generally affect the nonproliferation area. The extent to which we stress the values of nuclear war fighting in our doctrines and the values of nuclear weaponry does encourage the view that nuclear weapons have a useful role for other countries.

Fifth, special efforts will have to be made at the regional level. Completing the Treaty of Tlatelolco by obtaining Argentine and Cuban ratification is one example. New measures will be needed for areas like South Asia or the Middle East. We should look at the prospect of establishing nonexplosion zones or, in areas where there has been one explosion or two, no further explosion zones.

Indeed, there are many devices which could be suggested for pursuing this particular technique. One would be, in the Middle East, to generalize the existing Israel statement they will not be the first to introduce nuclear weapons in the Middle East and have a quid pro quo from the superpowers with a nonattack guarantee. Similar efforts might be tried in South Asia.

Finally and perhaps most important is the problem of organizing sanctions against proliferators. Basically, the IAEA safeguards system is like a burglar alarm. If the alarm works but the police do not react, it has little effect as a deterrent in the future. On the other hand, if you look back and you ask what happened when explosions have occurred in the past, the mildness of the Soviet and American reactions to the Indian explosion in 1974 would indicate that there is not as strong a deterrent effect as one would hope.

Given technological spread, proliferation will become more feasible over time. It is critical that it remain politically costly to the proliferator if we are to preserve a regime that reduces costs to the common interest. The problem of designing effective sanctions in this area deserves a very high priority.

Looking over the whole period, then, over three decades nuclear technology has spread to two or three score nations, yet only a small fraction have chosen to develop nuclear weaponry. And the question is, can that situation last? There is always a danger that as we manage to slow a rate of proliferation, which is an important thing to do, that nonetheless we can get to a tipping point where violations lead to breakdown constraints.

And that police function is traditionally the domain of the great powers, to make sure that the violations do not occur. But if the great powers become diverted by other issues, there is a danger that the gradual historical curve of proliferation could approach such a tipping point.

There is no simple political solution to the problem of proliferation, but political wisdom begins with the efforts to maintain the existing norms of the regime that we have. In this sense, I also regret the politicization of the IAEA, but I hope that our response will not lead to our shooting ourselves in the foot as we try to deal with this issue.

It has become fashionable nowadays to talk about managing proliferation, but managing proliferation requires a strategy for prevention, for dealing with the steps before as well as after an explosion. Without some prevention, the task of management may become untenable.

With those larger views of where we are as a nation over three decades in dealing with this major security issue, let me summarize very briefly what I think of where this administration stands in that historical period. Recently there has been increasing concern about the apparent slackening of American efforts to slow and manage the nuclear spread.

For example, in the view of the London Economist, a relatively conservative magazine, "the Reagan administration policy looks less like a show of sensible flexibility than like a chipping away at the foundations of the whole international effort to curb nuclear proliferation." Certainly, in comparison to the Carter administration the priority is lower.

There have been few Presidential statements or initiatives. On the other hand some export restrictions have been relaxed, and hard cases like South Africa and Argentina have been treated more leniently. There has been an uneconomic but potentially dangerous promotion of plutonium fuels, including ill-advised efforts to get German and Japanese bailout at Barnwell, which our own OMB will not finance.

On the other hand, to be fair, the Reagan administration still follows the general policy that has characterized previous administrations since 1975. I would sum up the situation with the following metaphor. The current administration's policy for nonproliferation is like a train that follows the main tracks, but with little steam in the engine and subject to frequent minor derailments.

Any American government that wants to slow the spread of nuclear weapons in this decade is going to have to deal more seriously with the major political problems that I have just identified, and above all place a higher priority on the proliferation problem than the current administration does.

Thank you.

[Mr. Nye's prepared statement follows:]

PREPARED STATEMENT OF JOSEPH S. NYE

Twenty years ago, John F. Kennedy saw the possibility of a world in the 1970's with 15 to 25 nuclear weapons states, a situation he regarded as "the greatest possible danger." Instead, the 1970's closed with five declared weapons states; one state which had launched a "peaceful explosion," and one or two which were believed to be just below the explosion threshold. Given that nuclear weaponry is a 40-year old technology, what is surprising is not that it has spread, but that it has not yet spread further.

If we specify a goal of reducing the rate and degree of proliferation so as to manage its destabilizing effects and reduce the prospects of nuclear use, then there are many promising tasks for non-proliferation policy. Even if one were to accept the sanguine view that the nuclear spread may not be destabilizing in all cases, the rate of proliferation affects the likelihood of destabilizing effects. And a sanguine view is far from certain. Sensible policy must hedge against potentially large down side risks.

Proliferation is sometimes conceived in simple terms of a single explosion. Indeed, that concept is enshrined in the NPT. But it can also be conceptualized as analogous to a staircase with many steps before and after a first nuclear test. A first explosion is politically important as a key landing in the staircase, but militarily, a single crude explosive device does not bring entry into some meaningful nuclear "club." The very idea of a nuclear club is misleading. The difference between a single crude device and a modern nuclear arsenal is as stark as the difference between having an apple and having an orchard.

There are various reasons why this is so, including the restrictive policies of the weapons states, the calculated self-interest of many nonweapons states in foregoing nuclear weapons, and the development of an international regime of treaties, rules, and procedures that establishes a general presumption against proliferation. The main norms and practices of this regime are found in the Non-Proliferation Treaty (NPT) and its regional counterparts trying to work toward a non-nuclear Latin America; the safeguards, rules and procedures of the International Atomic Energy Agency (IAEA), as well as in various U.N. resolutions. While there are a few important exceptions, the large majority of states adhere to at least part of this set of norms.

In the early 1970's, there was a degree of complacency about this non-proliferation regime. Such complacency was shattered in 1974 by the Indian explosion of a "peaceful" nuclear device using plutonium derived from a Canadian-supplied research reactor, and the oil crisis which led to a sudden surge of exaggerated expectations about the importance of nuclear energy, including fears that uranium supplies would be exhausted.

Various nations developed plans for early commercial use of plutonium fuels, and some countries such as Korea and Pakistan arranged to import allegedly commercial reprocessing plants for what later were disclosed to be nuclear explosives programs. Typical projections of the 1980s from this period saw eight reactors in Bangladesh, and 30 to 40 countries using plutonium fuels by the end of the decade. With this challenge to the regime, it is not surprising that policy responses in the late 1970's such as the London Suppliers Group and INFCE focused on fuel cycle issues.

Some of the heated debates of the 1970's about fuel cycle issues have now been answered by experience, economic trends and the conclusions of INFCE. For example, the argument that no state would find it rational to try to misuse a fuel cycle facility rather than build a dedicated facility has been disproven by Korean and Pakistan experiences. The view that shortages of uranium would require early use of plutonium has succumbed to more realistic economic projections. The view that nuclear energy would provide energy security has also been belied by reality and better analysis: the great threats to energy security in the 1980's are from political interruptions of Persian Gulf oil from which the appropriate answers are emergency stockpiles, conservation, and coal, not nuclear plants with 10-year lead times. And the optimistic projections about nuclear energy in developing countries have also had to be toned down for most countries in the light of economic experience. Of sixteen less developed countries currently operating reactors, only half a dozen have significant power programs. Ironically, the early pronouncements of the Reagan Administration seem to have been fading echo of the 1970's debate rather than the harbinger of the 1980's. Public and Congressional opinion soon brought the Administration back to the mainstream that has characterized U.S. policy since 1975.

The non-proliferation problems of the 1980's are more likely to have a political cast to them and require political solutions. This does not mean fuel cycle issues will not be important, but the fuel cycle is only one of six major problems that I foresee in managing proliferation in this decade.

(1) Keeping fuel cycle questions in a reasonable perspective will be important. The fuel cycle is neither the key to the problems nor irrelevant. Abolishing nuclear energy or nuclear exports would not solve the nuclear proliferation problem, because there are other paths to the making of bombs. And nuclear supply can provide important leverage. But important steps remain to be taken, such as improve-

ment of IAEA safeguards, full-scope safeguards (which means refusal to ship technology and materials to countries with unsafeguarded facilities), special arrangements for managing plutonium and highly enriched uranium, and international provisions for spent fuel storage.

(2) A second problem is priority. Non-proliferation is not a foreign policy; it is part of a foreign policy. Foreign policy always involves the adjustment of partly conflicting objectives in order to achieve as much as possible, within the constraints of a disorderly world. One of the effects of the attention given to proliferation in the late 1970's was to raise the priority of the issue for a number of governments. The Reagan Administration's emphasis on East-West conflict has led it to neglect areas of potential cooperation with the Soviet Union on non-proliferation. Some skeptics have urged a lowering of the priority given to non-proliferation on the grounds that its negative effects are exaggerated.

Just as nuclear weapons have produced prudence in United States-Soviet relations, they argue, so may nuclear weapons stabilize regional balances. This might be true if political conditions were similar. But the transferability of prudence assumes governments with stable command and control systems, the absence of fierce civil or territorial wars, and discipline over the temptation for pre-emptive strikes during the early stages when new nuclear weapons capabilities are soft and vulnerable. Such assumptions are unrealistic in many parts of the world. On the contrary, rather than enhancing its security, the first effects of acquiring new nuclear capability in many circumstances may be to increase a state's vulnerability and insecurity. The Israeli attack on the Iraq reactor has turned this theoretical point into a reality.

(3) Even if there is a high priority given to non-proliferation, difficult policy choices exist in relating the rate and degree. As technology spreads and proliferation occurs, we will have to direct more attention to these questions of advanced proliferation. Controls on information about laser fusion devices, technology with advanced weapons uses, space launchers, and other delivery systems will require more systematic analysis. Formulating sanctions that deter a quickening rate, while trying to prevent further development after a first explosion will be a delicate balancing act. Such steps can inhibit the development of nuclear war-fighting capabilities, and of thermonuclear devices.

(4) There is the problem of the way international rules and structures can have a net strengthening or weakening effect on each other. In one direction the non-proliferation regime interacts with other nuclear weapons and arms control regimes; in the other direction, it interacts with international energy and economic regimes. A successful non-proliferation policy in the 1980's will require attention to the connections in both directions.

To profess indifference to the superpower nuclear arms relationship, in particular the United States-Soviet negotiations, can weaken the non-proliferation regime in two ways. First, a disdain for the arms control institutions and concerns expressed by non-weapon states can exacerbate the discrimination issue that is the central dilemma in non-proliferation policy—the claim by less developed countries that the "nuclear club" discriminates against them. Second, nuclear doctrines and deployments that stress the usefulness of nuclear weapons in war-fighting situations may help to increase the credibility of deterrence, but they also tend to make nuclear weapons look more attractive to others. If states that had deliberately eschewed nuclear weapons see them treated increasingly like conventional defensive weapons, they may one day reconsider the decision to forego them.

In the realm of energy and economic regimes, a forthcoming posture on energy and technology transfer, including the development of non-nuclear energy alternatives and other measures to deal with energy insecurity, can help take the edge off confrontations which could otherwise generate a greed for "nuclear club" status and attention, rather than security.

(5) Special efforts will have to be made at the regional level. Completing the Treaty of Tlatelolco by obtaining Argentine and Cuban ratification is one example. New measures will be needed for areas like South Asia or the Middle East where events have progressed further than in Latin America. For example, a non-explosion zone could be a useful step. Given the hostility among the parties in the Middle East and their refusal to talk directly with each other, the obstacles are enormous.

On the other hand, the idea of developing an additional level of restraint in the Middle East makes sense. One way to do this would be to try to generalize the existing Israeli statement that they will not be the first to introduce nuclear

weapons in the Middle East. In the absence of agreement to negotiate among the states in the area, this might be done by having the two superpowers offer a guarantee of no nuclear attack against any state which agrees with the superpowers not to be the first to introduce nuclear weapons into the Middle East (and verified by a no explosion pledge). In other words, the agreement would be between the separate parties in the Middle East and the two superpowers and the quid pro quo would be the superpower nonattack guarantee. While this would take a degree of superpower coordination, it is one way of approaching a Middle East nuclear weapons free zone in a situation where the local parties are unable or unwilling to talk to each other. A similar effort might be tried in South Asia.

(6) Finally, and perhaps most important is the problem of organizing sanctions against proliferators. From time to time it has been argued that if there is a violation of IAEA safeguards or if there is another explosion of a nuclear device, the reaction of other countries and particularly the superpowers will be critical in terms of the effect of the event upon further proliferators. Basically, the IAEA safeguard system is like a burglar alarm. If the alarm works but the police do not react, it has little effect as a deterrent in the future. On the other hand, this is the kind of situation where nuclear exporters could seek commercial advantage and each superpower is tempted to seek separate political advantage by limiting the degree of its reaction against the new proliferator. The mildness of the American and Soviet reactions to the Indian explosion in 1974 are a case in point. While this may be the most difficult area to achieve any cooperation in a time of hostility in overall United States/Soviet relations, it is vitally important. Given technological spread, proliferation will be more feasible over time. It is critical that it remain politically costly to the proliferator if we are to preserve a regime that reduces costs to the common interest.

Over the past three decades, nuclear technology has spread to more than two score nations, yet only a small fraction have chosen to develop nuclear weaponry. Can the situation last? Obviously, there will be changes in political and technical trends. But the prospects that proliferation may be destabilizing in many instances; that nuclear weapons need not enhance the security positions of states; and that superpowers cannot fully escape the effects, provides the common international interest upon which the non-proliferation regime is based. Under such conditions, some inequality in weaponry is acceptable to most states because the alternative anarchic equality is more dangerous.

Realistically, an international regime does not need perfect adherence to have a significant constraining effect, any more than domestic laws require an end to deviant behavior in order to be effective. Nevertheless, there is a tipping point beyond which violations lead to breakdown of constraints. The police function is traditionally the domain of the great powers in international politics, but if they become diverted by other issues, there is a danger that the gradual historical curve of proliferation could approach such a tipping point.

Unfortunately, there is no simple solution to the political problem of proliferation. But political wisdom begins with the efforts to maintain the existing regime with the presumption against proliferation. It has now become fashionable to talk about "managing" proliferation. But "managing proliferation" requires a strategy for prevention, for dealing with the steps before as well as after an explosion. Without some prevention, the task of "management" may become untenable.

Recently there has been increasing concern about the apparent slackening of American efforts to slow and manage the nuclear spread. For example, in the view of the London Economist, "the Reagan administration's policy looks less like a show of sensible flexibility than like a chipping away at the foundations of the whole international effort to curb nuclear proliferation." In comparison to the Carter Administration, the priority certainly seems lower. There have been few presidential statements or initiatives. On the other hand, some export restrictions have been relaxed, hard cases like South Africa or Argentina have been treated more leniently, and there has been an uneconomic but potentially dangerous promotion of plutonium fuels.

To be fair, the Reagan administration still follows the general policy that has characterized previous administrations, but it is like a train that follows the main tracks, with little steam in the engine and subject to frequent minor derailments. Any American government that wants to slow the spread of nuclear weapons in this decade is going to have to deal with the major political problems I have identified, and above all place a higher priority upon the proliferation problem.

Senator PRESSLER. Thank you.

We will next call on Manning, president of the American Nuclear Society. Mr. Muntzing, if you could summarize your remarks, we will place your entire remarks in the record.

STATEMENT OF MANNING L. MUNTZING, PRESIDENT, AMERICAN NUCLEAR SOCIETY

Mr. MUNTZING. Thank you, Mr. Chairman and Senator Glenn. I am pleased to appear here to discuss with the committee some of the views of the American Nuclear Society, of which I am president, and also some related opinions of my own on nuclear nonproliferation policies.

I will submit my testimony for the record, as well as a public policy statement of the American Nuclear Society entitled, "United States Post-International Nuclear Fuel Cycle Evaluation [INFCE] policy" which is attached. I would ask that it be placed in the record as well.

Senator PRESSLER. Without objection, it is so ordered.

Mr. MUNTZING. The conclusions of the American Nuclear Society's public statement are principally twofold, as follows: The United States, first, should exercise leadership in efforts to improve safeguards through international cooperation and the development of appropriate institutional arrangements; and second, the United States should take action to restore its credibility as a reliable supplier and its leadership in the development of international nuclear policy by directing attention to and accepting the INFCE findings.

Now, from those conclusions I would like to focus my discussion on four topics: First, nuclear power's relationship to proliferation; second, the effectiveness of safeguards; third, actions and policies that can improve those safeguards; and finally, further national and international antiproliferation measures.

Let me turn first to the question of nuclear power's relationship to proliferation. The fear of nuclear power on proliferation grounds is based to some extent on a technical misunderstanding. There is a common impression that plutonium is plutonium and that all of it is admirably suited for use as weapons material.

There are in fact several isotopes of plutonium and the material that emerges from a power reactor is a mixture of these that can only with difficulty be fabricated into a very unreliable weapon. One should not be surprised, therefore, that no nation has yet used its nuclear power program as the road to a nuclear bomb.

On the other hand, there are contributions that the civilian nuclear power program makes to international peace and stability and, contrary to being a proliferator, I think that these are helpful to the nonproliferation objectives that we all share.

First, the nuclear power program offers to a large part of the world the only feasible escape from the highly destabilizing bondage of fossil fuels. By altering the supply-demand balance for oil, nuclear power serves to make oil supplies more available for all nations at more affordable prices.

Second, an important contribution is the Nuclear Nonproliferation Treaty. This treaty, as this commitee well knows, constitutes a bargain between the weapons nations and the nonweapons nations. The essence

of the bargain is that the nonweapons nations agree to forego nuclear weapons in return for two undertakings by the nuclear weapons states. The first is to make real progress in arms control negotiations. The second is to provide technical assistance to the nonweapons states, particularly with respect to developing nations and their peaceful uses.

It is fair to say that the first objective, controlling the arms race between the superpowers, has not met with a great deal of success. The provision for technical assistance, thus, is the glue that holds the NPT regime together at this time.

Third, it is important to note that with the nuclear power program there are important environmental effects. We have seen in the papers recently some of the detrimental effects from the use of coal such as acid rain and the greenhouse effect. Nuclear power offers a means of providing electricity without these grave environmental risks.

So that on balance it is fair to say that nuclear power is not a contributor to proliferation problems.

Let us take a look at the effectiveness of safeguards. The policies of the Carter administration to a great degree were a vote of no confidence in the IAEA safeguards. The bombing of Israel at the reactor in Iraq was also a dramatic demonstration of a lack of confidence in the IAEA safeguards.

In the wake of the Israeli raid, considerable publicity has been given to criticisms of the IAEA safeguards, and some of these have merit. What I would like to emphasize, though, is that safeguards cannot by themselves prevent diversion. They function as an alarm to draw the attention of governments.

The function of safeguards therefore is not to prevent, but to deter. An examination of the record reveals that they have performed this function very well. President Kennedy used to talk about facing a world at this time in the 1980's with 20 to 25 nations having nuclear weapons, and this has not occurred. In large part the reason that this gloomy prophecy has not occurred is attributable to the work of the International Atomic Energy Agency.

I might also observe that the IAEA is not ignoring the nonweapons states that have not signed the NPT. It is interesting to observe that Hans Blix, the new Director-General of the IAEA, has given what he calls the yellow alert to four countries—India, Pakistan, South Africa and Israel—and has said the alarm bells are now ringing loud and clear with respect to these four nations.

The fact that the IAEA safeguards are international in scope and management has some wider implications for world order that merit special examination. Safeguards historically are a product of détente, and despite differences on many other international issues, the United States and the U.S.S.R. continue to recognize that they have a common interest in holding the line against nuclear weapons proliferation, and they have frequently cooperated to that end in the IAEA.

IAEA safeguards may have an even more fundamental significance. The very existence of an international regime to which so many nations have been willing to delegate sovereign rights is unique in the modern world. A near-term application of IAEA's inspection experience could come if agreement were reached on a comprehensive test ban treaty. One of the major long-term benefits of IAEA safeguards may prove to be this demonstration that international inspection can be both practicable and tolerable.

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While we can say good things about safeguards, at the same time we must recognize that the safeguards regime of the IAEA can and should be strengthened. In the first place, the IAEA budget is really, in my judgment, quite inadequate to meet the needs, both for manpower and for equipment.

Let us take a look at the manpower. The IAEA—and I think this is startling—has been able to provide only about 50 percent of the man-days specified in guides indicating how individual facilities are to be safeguarded. At hearings recently, Senator Glenn quoted from a report showing that that in 1980 it would require 35,000 man-days of inspection effort by the IAEA inspectors to achieve all the Agency's technical objectives. But compare that to what occurred in 1979, when only 3,300 man-days were actually applied. The disparity is too important to be ignored.

In addition, the right of host nations to veto the Agency's inspectors on nationality grounds undoubtedly handicaps the Agency, and this is an area that needs to be modified.

I am concerned about the training aspect, and I have proposed that we ought to have an IAEA training academy where inspectors are trained and then committed to the Agency for a period of at least 5 years. Today inspectors are appointed for a 2-year term and about the time they learn what they are doing they are departing. An academy of professional inspectors would greatly improve this problem.

It is not only a manpower problem. There are equipment problems. We should certainly include and use the very latest technology that is available. There is a need for extensive applications engineering. We need to use miniaturization. We need to use standard reference materials. There are surveillance and containment programs, including redundancy of cameras, that should be included.

All these matters, measures of manpower and equipment, are needed to bring the IAEA's safeguards program to a desired level of effectiveness, but they cannot be done at the current level of funding, which unfortunately is less than a small city spends for its police department.

It is difficult for the Agency simply to raise member assessments in order to increase the safeguards budget. One possible way to consider this problem would be the use of user fees for IAEA safeguards services, and each country's assessment would be based essentially on the output of its safeguarded reactors. This is a way in which the financing could be resolved.

There are limits to safeguards. We can improve them a great deal. I advocate that and support it. The technology should be used and should be expanded. But in fact, there are limits. We have to recognize that. The warning is sounded by a technical agency, and I hope not a political agency. After that, after the warning by a technical agency, it is up to the police forces to take whatever individual or collective action they deem proper.

After the alarm sounds if there is an inadequate reaction safeguards will lose their force as a deterrent.

Let me conclude by mentioning a few further antiproliferation measures that could be useful in addition to safeguards. In the international arena, we should urge and go forward with a multilateral

approach to certain aspects of the fuel cycle. The Congress has been interested in this. We should pursue it.

Because of the difficulties involved, it is not easy for multilateral facilities to spring into being quickly, but strong leadership by the Congress and by the administration could help to do this. There are various efforts under way at the IAEA, including the international plutonium storage study, but multinational fuel cycle efforts beyond the IPS should be considered. For example, the establishment of reprocessing facilities under international auspices would be an important antiproliferation step.

Turning briefly to some of the policies of national governments, a fundamental step, as a matter of high diplomacy, should be for nations to encourage universal adherence to the Non-Proliferation Treaty. In addition, there are bilateral agreements that can help to supplement the international regime, and we should not forget those.

Finally, we have talked about the dual use problem. The supplier nations should make a determined effort to identify those dual use items for which controls are feasible. Private industry also has a role that it can play. The nonproprietary portions of those contracts that deal with proliferation matters should be published so that we see the role that the private sector plays in this as well.

Just one final word, Mr. Chairman. We all have on our minds the recent action at the IAEA. I agree that making that body a political agency is deplorable and somehow must be stopped.

But at the same time, I am alarmed over the announced intention to reassess the U.S. role in the IAEA. I hope we do not overreact. Any action we take that makes more difficult the future work of the Agency will in my opinion be at variance with our own interests.

Thank you very much.

[Mr. Muntzing's prepared statement follows:]

PREPARED STATEMENT OF L. MANNING MUNTZING

Mr. Chairman: I am grateful for the opportunity to appear before you today to present some views of the American Nuclear Society, of which I am President, and also some related opinions of my own on nuclear nonproliferation policies.

The ANS, founded in 1954, is a not-for-profit organization of some 13,000 scientists, engineers and educators from universities, research laboratories and industry.

The Society from time to time issues Public Policy Statements which represent its considered judgment on public issues related to nuclear science and technology. I am submitting as an attachment to my testimony one such statement, which includes discussion and recommendations relevant to these hearings. It is entitled "United States Post-International Nuclear Fuel Cycle Evaluation (INFCE) Policy."

INFCE, as members of this Committee know, was convened in October 1977 on the initiative of President Carter following his decision to "defer indefinitely" commercial reprocessing and recycling of plutonium produced in the U.S. nuclear power program and to restructure and defer the U.S. breeder reactor program.

Among the more salient of the INFCE conclusions, as highlighted in the attached ANS Policy Paper, the following stand out as being particularly relevant to your committee's current inquiry.

First, INFCE concluded that: "The use of commercial grade plutonium (i.e., that which is produced by nuclear power plants) is an unattractive route to the manufacture of nuclear weapons as compared with weapons grade plutonium produced by a dedicated program."

Second, INFCE concluded that proliferation of nuclear weapons is primarily a political, rather than a technical problem, and that "alternative fuel cycles do not provide significant proliferation resistance."

Third, INFCE concluded that institutional arrangements, such as multinational fuel cycle centers, provide attractive means for minimizing proliferation risks and that their formation should be encouraged.

Fourth, INFCE concluded that proliferation can be minimized by improved safeguards in connection not only with power reactors, but also with other fuel cycle facilities, including reprocessing plants.

The ANS Policy Statement deals with the implications of the INFCE findings for United States policy. The conclusions most pertinent to these hearings are as follows:

1. The United States should exercise leadership in efforts to improve safeguards through international cooperation and the development of appropriate institutional arrangements.

2. The United States should take action to restore its credibility as a reliable supplier and its leadership in the development of international nuclear policy by directing attention to and accepting the INFCE findings.

My testimony to this point reflects the official position of the American Nuclear Society. What follows contains an elaboration of this position through example and description and is, in my opinion, consistent with the official statements. In these further remarks I will be focusing principally on four topics: nucelar power's relationship to proliferation, the effectiveness of safeguards, actions and policies that can improve safeguards, and further national and international anti-proliferation measures.

NUCLEAR POWER'S RELATIONSHIP TO PROLIFERATION

One step that has been urged on governments as a way of restraining the proliferation of nuclear weapons is to try to stop the further growth of nuclear power. Indeed, in some cases the proposal has been to do away with nuclear power entirely.

This fear of nuclear power on proliferation grounds is based to a large extent on a technical misunderstanding. There is a common impression that "plutonium is plutonium" and that all of its admirably suited for use as weapons material. There are in fact several isotopes of plutonium and the material that emerges from a power reactor is a mixture of these that can only with difficulty be fabricated into a very unreliable weapon. One should not be surprised, therefore, that no nation has yet used, or shown evidence of intending to use, a nuclear power plant as the road to a nuclear bomb.

We should also point out to those who would do away with nuclear power on weapons proliferation grounds that such a course would be counterproductive in terms of their own objectives. One must assume that those objectives are the attainment of international peace and stability. From this very point of view they should be espousing, not opposing, nuclear power. Let me mention three contributions that nuclear power makes to international peace and stability.

First, it offers to a large part of the world the only feasible escape from the highly destabilizing bondage of fossil fuels. Nature has been capricious in its distribution of these energy sources. This fact has already produced international tensions as nations vie with each other to ensure the oil supplies needed to keep their economies running. Indeed, a plausible scenario for the outbreak of war involves the escalation of a conflict over the control of or access to oil supplies. Further, the tensions that accompany dependence on oil imports can themselves increase national motivations to acquire nuclear weapons.

Nuclear power programs throughout the world have already helped lessen these dangers. Today 286 power reactors operating in 25 countries, with a total capacity of 165,000 MWe, are providing about 9 percent of the world's electricity. Nuclear power plants are under construction in seven additional nations and planned for 10 more, making a total of 42 nations that have embraced the nuclear option. By 1990, counting only plants now operating or under construction, it is estimated that nuclear power will provide nearly 18 percent of the world's electricity.

Among the countries with nuclear power plants in operation by 1990, there will be only ten developing countries. Even countries without nuclear power may benefit from it, however. By altering the supply demand balance of oil, nuclear power serves to make oil supplies more available for all nations and at more affordable prices.

A second contribution of nuclear power to international peace and stability relates to the Non-Proliferation Treaty (NPT). As you know, this treaty constitutes a bargain struck on a global scale between three signatory nuclear weapon states, on the one hand, and a much larger number of non-weapon states—114 at this time—on the other. The essence of the bargain is that the non-weapon states agree to forego nuclear weapons in return for two undertakings by the nuclear weapon states. The first is to make real progress in arms control negotiations. The second is to provide technical assistance to the non-weapon states particularly the less-developed ones, with respect to the peaceful uses of nuclear energy.

Considering the failure to date of the superpowers to make good on the first undertaking—progress in arms control—I think it is fair to say that the provision of technical assistance is the glue that holds the NPT regime together. If the developed nations were forced to curtail their nuclear power programs, however, their ability to provide nuclear technical assistance would in all likelihood be diminished. Under these circumstances, the NPT regime could begin to come apart. The opportunity to obtain the adherence of key nations that have not yet signed the treaty would then be lost. Indeed, some that have signed might well exercise their option to withdraw and establish more self-sufficient nuclear programs. Such programs, combined with the release from the NPT obligation not to acquire nuclear weapons, might indeed pose a weapons proliferation threat.

A third contribution of nuclear power to international peace and stability relates to environmental effects. The continued employment of fossil fuels in power plants is seen by many experts as threatening to bring about environmental disasters that cannot fail to have detrimental effects on international order. Acid rain, a by-product of the fossil fuel cycle, as well as of other industrial processes, has already adversely affected lakes, forests and soils throughout the world. Potentially even more menacing is the growing accumulation of carbon dioxide in the atmosphere. This is thought likely by many scientists to cause world-wide increases in temperature, with resultant melting of polar ice caps and flooding of low-lying coastal regions of the world. Nuclear power offers a means of providing electricity without these grave environmental risks.

THE EFFECTIVENESS OF SAFEGUARDS

It did not escape notice that the policies of denial put into effect by the Carter Administration constituted a resounding vote of no-confidence in International Atomic Energy Agency (IAEA) safeguards. It was observed, for example, that in his proposal for the convening of INFCE, President Carter did not even mention the Agency.

It is hard to measure the damage done to the IAEA by this attitude of indifference, but it is clear that international institutions cannot be effective when there is an absence of support, especially by so pivotal a nation as the United States.

The most dramatic demonstration of a lack of confidence in IAEA safeguards was, of course, Israel's air raid in June 1981 on Iraq's research reactor. Pursuant to Iraq's adherence to the Non-Proliferation Treaty, this reactor had been subject to IAEA safeguards. The Agency's last inspection had occurred in January 1981 and, as reported by Dr. Sigvard Eklund, then IAEA Director-General, to the Agency's Board of Governors, "all nuclear material was satisfactorily accounted for." In reporting on the Israeli raid to the U.N. Security Council, Dr. Eklund noted, with ironic understatement, that Israel had "evidently not felt assured by our findings and by our ability to continue to discharge our safeguarding responsibilities effectively."

In the wake of the Israeli raid, considerable publicity was given to criticisms of IAEA safeguards, including those by two former inspectors, both Americans. These criticisms emphasized that inspections were always announced in advance, that inspected countries could veto the choice of inspectors based on nationality, that inspectors were not empowered to look for clandestine operations, and that the intervals between inspections afforded ample opportunities for illicit operations. Attention was also drawn to the fact that a nation may withdraw from the NPT on three months notice.

Some of these criticisms have merit and can be addressed in terms of remedy, as I will do later in these remarks. Overall, however, they seem to reflect an inflated vision of what safeguards can be expected to accomplish, and a misunderstanding of their purpose. As has been emphasized again and again by IAEA spokesmen,

safeguards cannot by themselves prevent diversion. Nor can they in most instances even prove that diversion has occurred. Generally, the most they can do is to indicate that the host country has failed to prove that diversion has not occurred. In doing this they function as an alarm, to draw the attention of governments. The function of safeguards therefore is not to prevent, but to deter.

An examination of the record reveals that they have performed this function admirably. When the IAEA was established in 1957, there was fear of runaway proliferation. In the early 1960s, President Kennedy used to speak of the prospect that a President of the United States in the 1980s might have to look out on a world in which as many as 25 nations would have nuclear weapons. These dire forecasts were based on the knowledge that for an increasing number of countries there were no longer any formidable technical obstacles barring the way.

That the gloomy prophesies have not come true is attributable in large part to the work of the IAEA. The Agency estimates that 98 percent of the nuclear facilities in non-weapon states are now under its safeguards. In 1980 alone, there were more than 1,100 safeguards inspections at about 500 facilities.

There has been no record of a diversion to military use in any safeguarded facility. Nor is the IAEA ignoring the non-weapon states that have not signed the NPT and are therefore not subject to IAEA safeguards. Applying the Agency's experience and insight to such nations, the new Director-General, Hans Blix, has already sounded what might be called a "yellow alert" in regard to four of them: India, Pakistan, South Africa, and Israel. He has said, "The alarm bells are now ringing loud and clear with respect to these four." By focusing informed scrutiny on the nuclear activities of these countries, the IAEA may have a deterrent influence on them as well as on the nations who are subject to its safeguards.

The fact that IAEA safeguards are international in scope and management has some wider implications for world order that merit special examination. Safeguards, historically, are a product of détente. When the IAEA was first established in 1957, the U.S.S.R. opposed Agency safeguards, contending that they represented an intrusion on national sovereignty. On June 20, 1963, the Soviets reversed themselves and announced their support of safeguards. This was ten days after President Kennedy's conciliatory American University speech that helped pave the way for the Limited Test Ban Treaty. This period was perhaps the high water mark of United States-U.S.S.R. good feeling.

Despite differences on many other international issues, the United States and the U.S.S.R. continue to recognize that they have a common interest in holding the line against nuclear weapons proliferation, and they have frequently cooperated to that end in the IAEA. Both superpowers have acted responsibly in denying nuclear weapons and weapons technology to their political allies, contributing, in the Russian case, to the souring of its relations with China. The fact that the IAEA is one place where U.S. and Soviet interests converge, can one day be of significance in restoring stability to a dangerously shattered world order.

IAEA safeguards may have an even more fundamental significance. The very existence of an international regime to which so many nations have been willing to delegate sovereign rights is unique in the modern world. As Myron Kratzer notes: "The international verification of national undertakings represents a fundamental step forward—indeed, a quantum jump—in the application of the rule of law in relations between sovereign nations."

Those who conduct the safeguards program are well aware of this aspect of their word. Thus, Hans Gruemm, the director of IAEA's safeguards division, has said, "IAEA safeguards have a role to play in shaping the long-term prospects for the survival of mankind." He sees the experience in conducting safeguards, for example, as "invaluable in the establishment of future more comprehensive means of achieving general disarmament."

A near-term application of IAEA's inspection experience could come if agreement were reached on a Comprehensive Test Ban Treaty. Negotiators for the two sides were reported in 1980 to be near agreement on a pact which would include a system of voluntary on-site inspection. Soviet acceptance of this provision may well have been influenced by the fact that IAEA inspection has not proved as burdensome as had been feared. One of the major long-term benefits of IAEA safeguards may prove to be this demonstration that international inspection can be both practicable and tolerable.

These long-term international considerations relating particularly to safeguards may prove a preeminent reason for supporting and strengthening the IAEA.

IMPROVING SAFEGUARDS

For all the reasons given, IAEA safeguards deserve the aggressive support of the United States. The kind of support I have in mind would go beyond unquestioning acceptance. Some of the criticisms have a degree of validity. The task in the years ahead will become increasingly complex with the appearance of more bulk fuel facilities such as reprocessing plants, which technically are more difficult to safeguard than power reactors. The IAEA safeguards regime can and should be strengthened.

This requires in the first instance an increase in the safeguards budget which, at its present level (about $25.6 million for 1982), is inadequate to meet the technical goals of the program. There is a shortage of both manpower and equipments.

As to manpower, IAEA data show that between 1970 and 1980 the professional safeguards staff increased less than four-fold, from 54 to 206, of whom 138 were full-time inspectors. In the same period, however, the number of power reactors subject to safeguards went from 10 to 126 and the number of safeguards bulk handling facilities (enrichment, fuel fabrication and reprocessing plants) from 4 to 49. In December 1981 testimony to this Committee, Richard Kennedy, then Undersecretary of State for Management, estimated that in the previous year IAEA had been able to provide only about 50 percent of the man-days specified in guides indicating how individual facilities were to be safeguard. At the same hearings, Senator John Glenn quoted from a report prepared for the Nuclear Regulatory Commission to the effect that in 1980 it would have required 35,000 man-days of inspection effort by IAEA inspectors to achieve all of the Agency's technical objectives. This compares to only 3,300 man-days actually applied in 1979. It seems obvious that the number of inspectors must be increased.

The right of a host nation to veto Agency inspectors on nationality grounds undoubtedly handicaps the Agency in making optimum use of its manpower. The United States should urge a modification in this practice. A reasonable reform might be to grant each country only a specified number of "peremptory challenges" (as in the U.S. jury-court system), after which a nation would have to "show cause" for rejecting any inspector nominated by the Agency.

There is room for improvement in the training of safeguards inspectors. Ideally, it would be desirable for the Agency to establish an academy for prospective inspectors to provide them with a good and common foundation on the use of safeguards techniques and equipment. The curriculum should include frequent trips into the field to apply the knowledge imparted under realistic circumstances. Upon graduation from the academy, the prospective inspectors should be given an appointment of sufficient length to repay the IAEA's investment in their training. Five years would seem to be a minimum period. At present the typical appointment is for a two-year period, with the possibility of an extension. This seems entirely insufficient since an inspector has so much to learn that he may not be fully effective until he nears the end of his second year.

Turning now from the inspectors to the equipment they use, it is essential that this equipment embody the very latest technology available. During the past decade there has been a substantial amount of research and development world-wide on new instruments and on techniques for verifying the identification, location and quantity of materials. As a result there is now a need for extensive applications engineering, in concert with the operators of facilities, to assure practical application of the instruments and techniques. Further, a great need has arisen for a maintenance and repair infrastructure. Of particular importance is the development of reliable sources for spare parts.

There is also a continuing need for miniaturization of equipment. Inspectors have commented that it is difficult to carry into the field all the equipment assigned to them. If the function of the equipment can be incorporated into smaller, lighter but still rugged containers, it will obviously make it more possible to make full use of the equipment.

Standard reference materials are needed for calibration of field and laboratory equipment and to support quality control and quality assurance programs. There is also a need for standardization in the manner in which safeguards data is generated, aggregated and processed. Without such standardization analyses can be misleading and comparisons meaningless.

The IAEA should be encouraged to further its surveillance and containment program. In support of that effort, there is a need for greater integrity and

reliability such as would be gained by redundancy of cameras and other surveillance devices. A major effort is needed to develop a new generation of rugged and inexpensive security seals which can operate reliably in difficult environments such as the fuel assemblies of an operating reactor. Simplicity of attachment and ease of verification are of utmost importance.

U.S. industry should be encouraged to take a leading part in meeting the various equipment needs, perhaps with government incentives if necessary.

As we have noted, the measures needed to bring IAEA's safeguards program to a desired level of effectiveness cannot begin to be taken at the present level of funding, which is less than a small city spends for its police department. When the stakes are so high, literally the peace and stability of the world, this should not be allowed to happen.

A political situation in the IAEA intrudes here to make it difficult for the Agency simply to raise member assessments in order to increase the safeguards budget. This involves the extreme sensitivity of Third World countries, the so-called Group of 77, to the balance between the safeguards budget, on the one hand, and the amounts contributed for technical assistance, on the other. While the relative urgencies of need would probably justify an increasing disparity in favor of safeguards, the resulting political turmoil, added to the political problems already besetting the IAEA, might be extremely disruptive, possibly to the point of threatening the Agency's continued existence.

A possible way out of this dilemma would be the imposition of "user fees" for IAEA safeguards services. Each country's assessment could be based essentially on the thermal output of its safeguarded reactors, with higher fees added for bulk fuel facilities because they are harder to safeguard. Even if the IAEA inspection system were reinforced substantially, as it should be, the share for a 1,000-megawatt unit could not amount to more than a few hundred thousand dollars a year. Such amounts would scarcely be noticed by bill-paying utility customers in industrialized countries. Third World countries would be unlikely to object since they generally would be paying very small user fees. At the same time the relief afforded national treasuries in industrialized countries might dispose them to take a fresh look at global needs for technical assistance.

The Reagan Administration has pushed the concept of user fees for government services furnished at home, for example, in the case of Coast Guard services to private yachtsmen. It would be wholly consistent, therefore, for the Administration to propose that this principle be applied to most of the budget for IAEA safeguards.

Before leaving the subject of safeguards, I would like to consider again their function and their limits. We have noted that the most that safeguards can do when a diversion is suspected is to sound a warning. If IAEA inspectors cannot conscientiously rule out the possibility that material and facilities they inspect are making some contribution to a military purpose, their obligation is to report this to the Board of Governors. Then, if the Board cannot verify that a violation is not taking place, notification must be given automatically to all IAEA members and to both the U.N. Security Council and General Assembly. The warning is thus sounded by the technical agency. After that it is up to the political forces to take whatever individual or collective action they deem proper. After the alarm sounds, if there is an inadequate reaction, safeguards will lose their force as a deterrent.

Situations may arise where the miscreant is a nation allied to us or one whose trade or favor we prize. We might hesitate to apply severe sanctions in such cases. Or it might be that a severe violation might call for punitive action that would conflict with the unwillingness of the American public to accept new involvements abroad. There are no escapes from such dilemmas. If we are not willing to pay significant costs in behalf of non-proliferation policies, those policies may fail.

FURTHER ANTI-PROLIFERATION MEASURES

Let me turn now to a brief review of measures, other than safeguards, to help minimize proliferation risks. Some of these are international in scope; others require actions by national governments; still others depend on initiatives by industry.

Turning first to the international arena, it is time to take steps toward a multilateral approach to certain aspects of the fuel cycle. Such an approach is relatively untested. There will undoubtedly be difficulties in accommodating sovereign

interests and in meeting organizational problems. Nor should unrealistic expectations be harbored about what multinational facilities will accomplish. No more than the IAEA itself can they offer absolute proof against proliferation. Nevertheless, it is important to make the effort.

Because of the difficulties involved, it may be unreasonable to expect multilateral facilities to spring into being as a result of quick, bold strokes. An incremental approach, step by manageable step, may be necessary. For example, the United States is cooperating with Japan on a feasibility study regarding the interim storage of spent fuel elements on a Pacific Basin island. Similar studies involving other nations and other locations would be useful.

The effort now being made under IAEA auspices to establish an International Plutonium Storage System (IPS) is a move in the right direction and deserves our support. Progress on IPS is becoming continually more difficult. Questions have arisen about access to the plutonium deposited in the system and about its underlying philosophy. There is the potential for a lengthy stalemate that should be avoided. We can look for help in furthering the IPS from the Committee on Assured Supply which has been established within the IAEA.

Multinational fuel cycle efforts beyond the IPS should also be considered. For example, the establishment of reprocessing facilities under international auspices would be an important anti-proliferation step.

The international non-proliferation regime still depends heavily on actions and policies of national governments of the leading countries. Let me suggest certain actions and policies which might be useful for our government to take at the present juncture.

A fundamental step is to encourage universal adherence to the NPT. Member countries should establish this as a diplomatic task of some importance without, however, isolating non-signers from nuclear commerce.

An opportunity exists to add to the standards governing the supply of sensitive nuclear material and equipment. A basic requirement is established by the NPT: there should not be such shipments unless the items involved will be subject to international safeguards. Also, the nations that are part of the London Suppliers Group have cooperated in establishing certain additional requirements for exports of sensitive equipment and material. Still other measures along these lines may now be possible.

Bilateral agreements can be an important complement to international non-proliferation efforts. National priorities may cause some nations to risk the censure that might follow a violation of international treaty commitments. Such could be effectively deterred by a bilateral agreement with clearly defined sanctions for violations.

In recent years much attention has been given to presumed efforts by some nations to import uncontrolled commodities which, in addition to normal innocuous uses, also have special applications in enrichment or reprocessing plants. Some of these so-called "dual-use" items are so common that it would be virtually impossible to subject them to meaningful controls. This may not be true of all, however, and supplier nations should make a determined effort to identify those for which controls are feasible.

Private industry has its own opportunities to contribute to anti-proliferation efforts. One such opportunity is in the area of nuclear supply contracts. The contracts are uusally not made public because they may contain commercially valuable information. Nuclear suppliers should publish the portions dealing with non-proliferation conditions and sanctions. This would demonstrate the role that commercial contracts play in deterring proliferation and would promote greater uniformity and quality in contractual requirements.

CONCLUSION

The years ahead can be expected to witness some further spread of nuclear weapons capability. Dealing with such contingencies when they arise may well require all the wisdom, statesmanship and resolve we can muster. It is essential that we prepare now by creating the institutions and contingency plans that can limit such outbreaks both in their number and in their severity.

Just one supplementary word, Mr. Chairman. When news came recently that the IAEA General Conference had suspended the credentials of Israel to attend this year's meeting, I reexamined my testimony. I found no reason to change it over this incident. I agree with the remarks made in Vienna by Kenneth Davis,

the head of our delegation, to the effect that the politicizing of U.N. bodies is deplorable and must somehow be stopped. The action of our delegation in walking out of the General Conference and absenting itself from a subsequent meeting of the Board of Governors seems to have been an appropriate way of showing our displeasure.

I am alarmed, however, over the announced intention to reassess the United States role in the IAEA. I hope we do not overreact. Any action we take that makes more difficult the future work of the Agency will, in my considered opinion, be at variance with our own interests.

The question of whether or not to withhold U.S. financial contributions to IAEA is bound to arise. A move to cut them off in 1983 could be supported by an alliance of (1) people who decry the IAEA as too weak in resisting proliferation, (2) those who mistrust the Agency as both a supranational regulator and a distributor of largesse to an "ungrateful" Third World, and (3) a mix of pro-Israeli legislators who might reject any action short of that. Yet a shutoff of U.S. funding would cripple IAEA in its work as the official monitor of the Nuclear Non-Proliferation Treaty (NPT). The chances of developing any alternate for that role are now nil. Détente is in limbo, and the Third World has turned sharply against anything it chooses to regard as a challenge to individual sovereignty or to its growing collective strength.

United States Post-International Nuclear Fuel Cycle Evaluation (INFCE) Policy

A POLICY STATEMENT OF THE AMERICAN NUCLEAR SOCIETY[1]

INTRODUCTION

In April 1977, the United States Government formally reversed its longstanding encouragement of commercial nuclear fuel reprocessing [giving as the reasons for this reversal of policy] the potential enhancement of non-proliferation of nuclear weapons and concern for the buildup of plutonium stockpiles. It decided to "defer indefinitely" commercial reprocessing and recycling of plutonium produced in the United States nuclear power program and to "restructure" and "defer" the United States breeder reactor program. That White House statement by the President on nuclear power policy also proposed an international review program which was convened in October 1977 as the International Nuclear Fuel Cycle Evaluation (INFCE) with more than sixty attending nations and organizations.

With the completion of the two-and-one-half year INFCE studies that the United States initiated, the pause to consider systematically the principal options that might be most supportive to non-proliferation objectives has been accomplished. Based on the INFCE conclusions, the American Nuclear Society (ANS) believes it is now appropriate and timely for the United States Government to revise its nuclear policy from that of indefinite deferral of reprocessing and of breeder development to a position of international leadership, emphasizing a balanced and appropriately paced program that permits light water reactor (LWR) fuel reprocessing recycle and breeder development, including its fuel cycle, under effective safeguards.

This policy would reflect INFCE findings which included United States technical and national judgments of the sixty-six participating nations and five international organizations. This action will not only demonstrate to foreign nations a United States appreciation of their need for energy assurance, but will also provide renewed leadership in the drive for assured energy supply, as expressed at the 1980 Venice Summit.

IMPORTANCE OF INFCE

Certain United States expectations for the study were realized. In particular and of great importance to continued international nuclear cooperation as envisaged by the Non-Proliferation Treaty was the demonstration that complex

[1] The American Nuclear Society, founded in 1954, is a not-for-profit scientific and educational society of 13,000 scientists, engineers, and educators from universities, government and private laboratories, and industry. Public Policy Statements are the considered opinions and judgments of the Society in matters related to nuclear science and technology. They are intended to provide an objective basis for weighing the facts in reaching decisions on important national issues. Copyright 1981 by the American Nuclear Society, La Grange Park, Ill.

and potentially divisive issues can be dealt with constructively in a forum with both industrialized supplier countries and the user countries participating. This cooperation is required to establish systems and technologies and can effectively minimize the risk of proliferation while assuring energy supplies to all nations. Secondly, the serious United States concern about proliferation has been underscored with the international community and accepted as a vital issue, along with world concern about assurance of fuel supplies. By accepting and implementing the findings of the combined efforts and recommendations of sixty-six nations, the United States will demonstrate a willingness to again cooperate in a positive manner on international nuclear and energy concepts, and the United States will regain its leadership in influencing nuclear developments. In the world energy arena, this action by the United States would aid in avoiding major confrontations over Middle East oil through recognition of our ability, as a consumer of a major portion of the world's oil supply, to substitute alternative energy sources for diminishing oil supplies. This action would enable the United States to:

1. In United States diplomacy, use two powerful instruments of policy formation and policy execution: technical expertise and management skill.
2. Influence the direction and implementation of non-proliferation actions through continued international safeguards activities and institutional fuel cycle and breeder arrangements
3. Remove a major hurdle in the domestic power debate regarding the present and future use of nuclear power.
4. Support the Western Alliance in reducing dependence upon oil.

INFCE FINDINGS

The final report of the INFCE program was issued at the end of February 1980, and some of the important findings are as follows:

1. Nuclear energy is expected to increase its role in meeting the world's energy needs and can and should be widely available to that end.
2. Proliferation is primarily a political, rather than technical, matter, and effective measures can and should be taken to minimize the danger of proliferation of nuclear weapons without jeopardizing energy supplies or the development of nuclear energy for peaceful purposes.
3. Assurance of supply and assurance of non-proliferation are complementary.
4. The use of nuclear power is considered to be necessary to provide a viable electricity supply opinion in a number of developing countries, as well as in developed countries.
5. The construction and planned misuse of nuclear power fuel cycle facilities is not the easiest or the most efficient route to acquire materials for the manufacture of nuclear weapons.
6. Alternative nuclear fuel cycles do not provide significant proliferation resistance and cannot be available until after the year 2000.
7. International safeguards are an essential feature of the nuclear power industry and must be an integral part of reprocessing, fuel fabrication, and the plants themselves from the inception of plant design.
8. The uranium/plutonium (U/Pu) fuel cycle is optimal from an energy efficient point of view, and the diversion risks encountered in the various stages of the fast breeder reactor (FBR) fuel cycle present no greater difficulties than in the case of the LWR with the U/Pu cycle, or even in the case of the once-through cycle, in the long term.
9. Waste management methods, including spent fuel storage, have, for the most part, been proven operational or demonstrated on an engineering scale; no major technical problems remain to be resolved.
10. Institutional arrangements were seen as important to minimizing proliferation risks and to increasing assurance of supply. Multinational and international fuel cycle centers are attractive non-proliferation institutions, and their formation should be encouraged.
11. Deployment of a significant number of fast breeder reactors (FBRs), using current technology and oxide fuels, would be feasible by 2000.

These findings are consistent with the United States nuclear technical community, which expressed almost identical judgments in 1977 and 1978 through committees such as the Liquid Metal Fast Breeder Reactor (LMFBR) Review Steering Committee and in National Academy of Science evaluations.

The basic technology for reprocessing, plutonium handling, and thermal recycle is well established and widely disseminated. At least nine nations have reprocessed spent fuel, and several have plans to expand their programs. At least 25

metric tonnes (MT) of separated plutonium exist today, and as much as 150 MT may, irrespective of the U.S. policy, exist by the end of this century.

Although some nations consider recycle in LWRs to be only marginally cost effective, reprocessing and recycle are (a) indispensable to a breeder fuel cycle, and (b) seen by some countries as a positive near-term contribution to their energy independence. The matter is emphasized by the conclusion that uranium savings to 35 to 40% would be achievable from thermal reactor recycle, compared with the once-through cycle for LWRs.

RECOMMENDATIONS FOR A REVISED U.S. POLICY

It is clear from the INFCE findings, supported by the results of the domestic Non-Proliferation Alternative Systems Assessment Program (NASAP), that there is now both a national and international consensus that endorses the U/Pu fuel cycle and the breeder, and defines the directions in which to proceed on development and demonstration. Therefore, ANS recommends the adoption of a revised United States nuclear policy, which includes proceeding with a balanced and appropriately paced program of reprocessing and recycle and with the development and demonstration of the breeder and its fuel cycle. Specifically, the ANS recommends that:

1. The Government, with its agencies, endorse nuclear power and that such endorsement provide the utilities and United States industry with a stable and predictable licensing, financial, safety and safeguards environment.

2. The Administration issue a policy statement on reprocessing and recycle (or fuel reuse) that acknowledges INFCE findings and which proceeds with those actions—Generic Environmental Statement on Mixed Oxide Fuel (GESMO) and licensing—which would lead to construction and operation of such facilities.

3. The Administration endorse a high-confidence strategy to proceed with breeder system development and commit itself to the prompt construction of a fast breeder reactor demonstration plant.

4. The Administration take the steps needed to define its program for improving internationally acceptable safeguards and demonstrating application and surveillance of such safeguards through the International Atomic Energy Agency (IAEA).

5. The United States Government, in close cooperation with the nuclear industry, take the initiative in establishing regional, international, or multinational institutional solutions for sensitive fuel cycle services that would provide supply assurance to all nations at reasonable cost for such services.

6. The Administration and Congress reestablish the United States as a reliable nuclear supplier by reviewing the Nuclear Non-Proliferation Act of 1978 and other laws, rules and regulations for needed modifications to reflect INFCE's recommendations for a proliferation resistant worldwide nuclear regime.

DISCUSSION OF THE IMPLEMENTATION OF INFCE FINDINGS THROUGH A REVISED UNITED STATES POLICY

The relationship of this recommended policy to INFCE findings is described as follows:

I. Stable and predictable nuclear power environment

The use of nuclear power is expanding worldwide in both industrialized and less developed countries. Current practice in other nations was stated in INFCE to be, "well adapted to meeting the needs of suppliers and consumers, and it seems likely that it will continue to do so." To retain this stability, both here and abroad, there is an acknowledged need to stabilize, shorten, and prevent nonproductive disruptions of the licensing and environmental assessment process. By providing, through a realistic approach, a practical example that achieves the goals for environmental concern and safety, the United States can better ensure adoption of similar procedures tailored to the needs of each country.

II. LWR recycle

Because of the wide range of estimates for worldwide uranium supply, the need for improved LWRs and LWR recycle to extend this finite resource was addressed in INFCE. Working Group 4, reviewing reprocessing, plutonium handling, and recycle, concluded that the "basic technology is well established" with little adverse environmental impact. As to economics, it was concluded that "no

one fuel cycle can be said to have a clear economic advantage in all cases." Therefore, many nations may choose to proceed with LWR recycle for a variety of reasons related to their particular overall situations, with economics being only one factor.

The potential savings from recycle in uranium over the once-through cycle were found by INFCE to be 35 to 40 percent, and even with improved once-through LWRs, optimized plutonium recycle would achieve uranium savings of 20 to 30 percent. This conservation of uranium, a depletable world resource, and the fact that operating experience and an established industry infrastructure from LWR recycle is ultimately needed for the breeder system makes the resumption of recycle demonstration a necessary United States initiative. With recycle, the United States can help the world uranium supply situation, particularly after the year 2000, and permit the smaller, less developed countries to obtain uranium supplies for LWRs at reasonable prices. The operation of industrial-scale reprocessing and refabrication facilities will also reduce the uncertainties of recycle costs. These results, made available to the international nuclear community, would assist our reinstatement of a leadership position in nuclear power technology.

III. The breeder

The choice of the uranium/plutonium system for light-water reactors and breeders was confirmed as the best choice by INFCE studies. Similarly, INFCE determined that the need for world energy sources, free from supply restrictions, makes early adoption of the breeder in developed, industrialized countries, a prudent course to follow.

A vigorous United States breeder program, possibly in conjunction with other nations, would meet the need expressed by INFCE as follows:

"If nuclear capacity growth approaches INFCE's high projection, substantial deployment of improved thermal reactors and fast breeder reactors early after 2000 would be required to provide assured nuclear electricity supply."

The inherent ambiguity of the present United States position regarding recycle and the breeder, as they pertain to uranium use and availability of indigenous energy sources, would thus be avoided by a change in the United States breeder program to a high confidence strategy, permitting early deployment of breeders. Prudent energy supply planning suggests the importance of erring on the side of supply in excess of sufficient future and available energy resources, rather than a gamble against undersupply and the risk of shortfalls.

Even for lower nuclear capacity projections, proceeding with plans for early deployment of the breeder represents a prudent course of action should the need for more power occur, or if coal and solar goals are not attained. Both INFCE and NASAP point to the long development and demonstration time needed for the breeder system, which even in a vigorous program, may not permit United States deployment until 2010 or later.

The NASAP report also succinctly summarizes the need for an effective United States breeder program as follows:

"In order to influence the liquid-metal fast breeder reactors programs of other countries, not only must the U.S. be a member of the fast-breeder development community, but it also needs to exercise leadership in developing the technical measures which would reduce the proliferation risk of fast breeder reactors. In particular, how to design reprocessing and recycle plants to facilitate international safeguards and improve proliferation resistance should continue to be investigated to understand their proliferation-resistance effects better, as well as to establish their technical and economic tradeoffs."

A high confidence, aggressive breeder program, integrating all elements necessary for a breeder power economy, such as reactors, reprocessing, and fuel fabrication, should be initiated. Research and development (R&D) and demonstration plants must be identified and planned with established budgets and firm commitments to ensure that the United States option for early deployment of breeders is not lost. As important is the necessity to develop a breeder industry infrastructure and skills.

IV. Reprocessing and safeguards

INFCE sees reprocessing as a necessary preliminary to many fuel cycles and as an essential one for the breeder. It was observed that the proliferation risk for recycle plants is manageable and could be further minimized by proper applica-

tion of advanced safeguards, international surveillance, technical modifications, and through services provided by international or multinational institutional facilities. The United States concern over proliferation from reprocessing and the U/Pu system was specifically addressed by INFCE as follows:

1. INFCE concluded that "Proliferation is primarily a political, and not a technical, matter" and that international measures already exist to reduce the risk of proliferation.

2. INFCE minimized concerns regarding the use of the commercial nuclear power fuel cycle as a route to proliferation. The evaluation stated, "The construction and planned misuse of fuel cycle facilities is not the easiest nor the most efficient route to acquire materials for the manufacture of nuclear weapons" and that, "The use of commercial grade plutonium is an unattractive route to the manufacture of nuclear weapons as compared with weapons grade plutonium produced by a dedicated program."

3. INFCE found with respect to fuel cycle services that, "means exist to minimize the danger of misuse of fuel cycle facilities—including technical measures, improved safeguards, and institutional arrangements."

4. Technical measures by themselves have only a limited ability to reduce proliferation risk. However, institutional arrangements were seen as contributing importantly to minimizing proliferation risks and to establishing assurance of supply.

5. INFCE concluded that improved safeguards can minimize proliferation. This view was expressed in the following observations:

"Further development and improvement of existing methods and techniques were foreseen as necessary to meet safeguards objectives at reasonable costs, in connection with technologies for uranium enrichment, industrial-scale reprocessing or irradiated fuel, and mixed oxide fabrication for LWRs or breeder reactors.

"For future reprocessing and mixed oxide fuel fabrication plants it will be essential to take full account of criteria for effective international safeguards."

As noted before, the United States must regain its nuclear leadership in the world. By the demonstration of reprocessing and recycle, using improved safeguards and subjecting these demonstrations to IAEA surveillance, the United States would not only provide meaningful data to the international community, but would necessarily address the issue of nuclear waste management. As noted by INFCE, the management of low and medium level wastes has been demonstrated and "well proved" (and) "The vitrification technology for immobilization of high level wastes is currently being applied on an industrial scale for wastes from low burn-up fuels. This technology has been demonstrated on an engineering scale for wastes from high burn-up fuel. The reference technology for deep underground repositories for high level wastes is based on generic concepts and field experience. Some of the assumptions made can be validated only if the repositories of the kind considered were actually to be constructed and operated."

V. Establishing multinational institutional services and verification programs for safeguards

INFCE noted the "growing importance of international cooperation through the development of recommendations, guidelines and codes of practice" for an effective, worldwide, proliferation-resistant nuclear industry. The evaluation also observed that institutional arrangements were seen as contributing importantly to minimizing proliferation risks and establishing assurance of supply. The United States policy should address these observations by encouraging multinational services, such as fuel supply assurance, plutonium storage, and spent fuel storage concepts now under discussion, and also by establishing a multinational fuel cycle center.

The Carter Administration policy of deferring reprocessing has hampered research and development efforts to improve safeguards technology. The United States, with more than twenty years of commercial and national laboratory involvement with safeguards, should be taking the lead in this essential international activity.

VI. Assurance of supply

A revision in United States policy should take into account the following INFCE findings:

"The main concerns with respect to assurance of supply have arisen not from commercial defaults or market failure, but as a result of government intervention in pursuit of national policies and objectives.

"The right of prior consent should be exercised in a manner that is predictable and that conforms to any understanding that may have been reached between the parties when the right of prior consent was established."

The revised United States policy must consider the needs and sensitivities of both industrialized and lesser developed countries. A return to many of the precepts of the U.S.-initiated Atoms for Peace concept would do much in this direction. It would meet the INFCE observation on the "effectiveness and acceptability of bilateral agreements between developing and industrialized countries" wherein criteria would include:

1. Responsiveness to needs.
2. Effective safeguards.
3. The extent to which non-proliferation undertakings, which would have to be mutually agreed to, would interface with or limit the peaceful nuclear power program of a country.

Also to be considered are international arrangements, which may cover the following areas:

1. International arrangements for assured fuel and heavy water supplies.
2. Participation in specific nuclear fuel cycle activities on a bilateral or multilateral basis, consistent with the non-proliferation commitments of the parties involved.
3. Increased availability of specialized training programs for developing the required manpower of nuclear installations.
4. Increased availability of resources for nuclear power programs from international financial organizations.

The impact of the United States action on international nuclear activities in the Nuclear Non-Proliferation Act of 1978 (NNPA) has created a counterproductive effect because many nations now believe that the United States will follow a path most advantageous to its own interests, using leverage in nuclear supplies. Restrictions in nuclear supply are evident from the Act's provisions:

1. Unilateral United States demand that all bilateral Agreements for Cooperation be renegotiated or United States nuclear exports to that country will be suspended.
2. Requirements for United States consent to retransfers of special nuclear material produced through the use of United States supplied facilities.
3. Requirement for United States prior approval for reprocessing of material used in or produced through the use of United States supplied facilities.
4. Requirement for United States approval in advance of facilities in which United States-supplied material, or material used in a United States-supplied facility, will be stored.

The ANS urges that the impact of the NNPA on foreign relations and United States industry be examined promptly so a positive, helpful, yet responsible role would accrue to the United States in world energy councils.

CONCLUSIONS

From a detailed review of the INFCE results and the implications with respect of a revised policy for the United States nuclear policy and actions, ANS concludes as follows:

1. The previously expressed concern regarding proliferation can now be achieved with international cooperation on safeguards and the development of appropriate institutional arrangements through the leadership of the United States.
2. The United States should take a necessary step to restore the domestic nuclear option by accepting and implementing the findings of INFCE. Steps should be taken to implement the recommendations in this position paper on the U/Pu cycle, reprocessing and the breeder.
3. The Government should also take the actions recommended to restore credibility and leadership in international nuclear policy as a reliable supplier and in safeguards development by (a) signaling attention to the INFCE results, (b) acceptance of the INFCE findings, and (c) taking the legislative steps necessary to revise the Nuclear Non-Proliferation Act.

Senator PRESSLER. Thank you very much. Finally, we will hear from Paul Leventhal of the Nuclear Control Institute. If you would summarize your statement as much as possible, we will place your entire statement in the record.

STATEMENT OF PAUL L. LEVENTHAL, PRESIDENT, NUCLEAR CONTROL INSTITUTE, WASHINGTON, D.C.

Mr. LEVENTHAL Thank you, Mr. Chairman and Senator Glenn. I appreciate this opportunity to testify this morning on behalf of Nuclear Control Institute. I am Paul Leventhal, president of Nuclear Control Institute.

We are a relatively new organization that is working exclusively on seeking to prevent the horizontal spread of nuclear weapons. We have among our board members several specialists on the subject of proliferation, including Dr. Theodore Taylor, a former nuclear-weapons designer; Adm. Tom Davies, formerly nonproliferation Chief of the Arms Control and Disarmament Agency; Peter Bradford, formerly a member of the NRC and now chairman of the Maine Public Utilities Commission; and Dennis Hayes, who was the director of the Solar Energy Research Institute during the Carter administration, and himself a specialist on proliferation issues.

The institute chairs an informal Working Group on Nuclear Explosives Control Policy, which is made up of several public-interest organizations that have an interest in this problem. I would like to put into the record a letter that was sent by some 24 members of the Working Group requesting the hearings that you are holding today on the nonproliferation policy of the Reagan administration. That letter, which was sent in June, was prompted by the knowledge that emerged at that time of this administration's reprocessing and plutonium-use policy, so-called.

Senator PRESSLER. Without objection, we will insert it.

[The information referred to follows:]

COMBINATION OF IDENTICAL LETTERS SENT INDIVIDUALLY TO CHAIRMEN PERCY AND ZABLOCKI

Hon. CHARLES H. PERCY,
Chairman, Committee on Foreign Relations,
U.S. Senate, Washington, D.C.

Hon. CLEMENT J. ZABLOCKI,
Chairman, Committee on Foreign Affairs,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: We are writing to you on behalf of our organizations with an urgent request that you promptly hold hearings on the new "reprocessing and plutonium-use policy" of the Reagan Administration.

As you know, the text of this far-reaching policy has not been released to the public. The few details that have been disclosed indicate that the President has authorized sweeping reductions in the controls that the United States maintains over the transfer of weapons-sensitive nuclear technologies to other nations and over the production of separated, weapons-usable plutonium from U.S.-supplied civilian nuclear fuels abroad.

These changes may well exceed both the spirit and the letter of the Nuclear Non-Proliferation Act. Equally important, they ignore the unprecedented domestic and international concern with nuclear weapons and with the growing risk of nuclear war. They should not be permitted to be implemented without a full Congressional inquiry and consideration of remedial legislation.

In particular, we urge thorough and timely consideration of the following:

1. the dangerous impact of this policy insofar as it provides support to other nations contemplating reprocessing and use of plutonium;

2. the highly discriminatory nature of the policy, favoring Euratom and other European countries and Japan, with the likely consequences of sparking deep resentments and renewed efforts to develop nuclear-weapons capability in several of the most unstable regions of the world;

3, the long-term programmatic approvals of weapons-sensitive nuclear activities that would be authorized by the policy, and the difficulty—if not the impossibility—of making the required statutory determinations regarding adverse effects on U.S. common defense and security, on proliferation risk, and on the ability of international safeguards to provide "timely warning" of a diversion of nuclear materials to weapons purposes;

4. the spread of plutonium factories and the accumulation of enormous stores of plutonium in Europe and Japan, and the likelihood that these materials, along with technology and equipment for producing them, will become articles of legitimate commerce and will rapidly spread throughout the world.

Mr. Chairman, we deeply appreciate and commend your long-standing commitment to nuclear non-proliferation and your support of enactment and enforcement of the Nuclear Non-Proliferation Act. We urge you to pursue this commitment by holding hearings to inquire into the appropriateness and legality of the Administration's new policy. We also urge you to consider, in the context of these hearings and in time to permit action by this Congress, pending and other legislation to bar the transfer of weapons-sensitive nuclear technology and the use of separated plutonium as a commercial fuel.

Thank you for your prompt consideration of this urgent request.

Sincerely,

Paul Leventhal, Nuclear Control Institute; Jeremy Stone, Federation of American Scientists; Theodore B. Taylor, Appropriate Solar Technology Institute; William Adler, Americans for Democratic Action; Chris Palmer, National Audubon Society; Michael Faden, Union of Concerned Scientists; Katherine Magraw, Council for a Livable World; Thomas B. Cochran, S. Jacob Scherr, Natural Resources Defense Council; Anne Cahn, Joseph Clifford, Committee for National Security; Rafe Pomerance, Caroline Petti, Friends of the Earth; D. Barton Doyle, Ripon Society; Brooks Yeager, The Sierra Club; Anna Gyorgy, Critical Mass Energy Project; Ed Glennon, SANE.

Virginia Foote, Center for Development Policy; Robert Alvarez, Environmental Policy Center; Bill Wickersham, World Federalists Association; Eric Fersht, Greenpeace; Ruth Nieland, FSPA, NETWORK—Catholic Social Justice Lobby; Jean Sindab, Washington Office on Africa; Richard Kinane, Environmental Action Institute; Howard Moreland, Coalition for a New Foreign & Military Policy; Mary Tucker, Michele Altemus, Nuclear Information & Resource Service; Jane Wales, Physicians for Social Responsibility.

Mr. LEVENTHAL. In my remarks, I will comment generally on the nonproliferation policy of the Reagan administration, focusing on principal differences and similarities with previous policy. I will explore some of the assumptions that underlie the Reagan policy. Then briefly, I will look at one particular element that we find particularly disturbing, since it seems directly to undercut one of the most significant provisions of the Nuclear Non-Proliferation Act: the required consideration by the executive branch of whether international safeguards can provide "timely warning" of a diversion of weapons-usable plutonium. Such consideration must be made in connection with any U.S. approval of reprocessing of U.S.-supplied fuel or with any transfer of such spent fuel for reprocessing. And finally, I will take a brief look at what might still be done to try to bring the proliferation problem under control.

Regarding the Reagan policy, the most important difference that is basic to all other aspects of the policy, is the administration's attitude toward plutonium. We must be very clear on this. The Reagan administration views plutonium as a legitimate civilian fuel, and is promoting reprocessing and plutonium use both at home and abroad. This was made clear in the nonproliferation policy statement of July of last year, followed up by the domestic nuclear policy statement in October.

The most important similarity to previous policy is this administration's all-out effort to accommodate the Japanese and the West Europeans, a process that began in earnest in the final year of the Carter administration, when it became apparent that our West European and Japanese allies were not expected to do our bidding or to follow our example with respect to discouraging reprocessing, plutonium-use and development of advanced reactor and fuel-cycle technologies.

In this sense, the Reagan policy is a direct evolution from where the Carter policy left off at the end of that administration. In both respects—the key difference and the key similarity—the net effect is a drastic undermining of the U.S. commitment to nonproliferation as originally developed by Presidents Ford and Carter, and as embodied in the Nuclear Non-Proliferation Act.

The likely outcome, unless Congress reasserts its watchdog role, is the rapid spread of separated plutonium, and the technology for producing it, throughout the world. This plutonium will accumulate in amounts equivalent to thousands, eventually tens of thousands, of atomic bombs. And just over the horizon is the spread of highly enriched uranium and the advanced centrifuge and laser technologies for producing it cheaply and efficiently. This equally dangerous problem may prove to be inevitable because the Reagan administration seems bent on promoting, possibly even exporting, those technologies or the components of those technologies as well.

Central to the direction of the Reagan policy is a set of assumptions as to what constitutes the so-called "real world," as described by Under Secretary of State Kennedy in some of his speeches on how to deal with those realities.

For the Reagan administration and for the nuclear bureaucracy that has guided its policy, the real world is dominated by the staunch resistance of the West Europeans and the Japanese to our nonproliferation efforts. There is a perceived need to accommodate their demands for plutonium and sensitive technologies in the hope of winning their cooperation in denying these weapons materials and technologies to others.

This supposed political realism is based on the assumption that the spread on nuclear weapons is inevitable, and that our only hope is to try to manage, not to prevent, it.

I would like to point out, however, that the real world they speak of is largely of their own making. It is made up of a very small but powerful nuclear elite in the United States and in Western European countries and Japan—an elite, it should be noted, that does not have a popular base of support, that operates largely in secrecy, and that is perpetuated in these countries by virtue of the infrastructure it provides: a nuclear-power infrastructure to be sure, but also the infrastructure needed to produce nuclear weapons if nuclear weapons are ever deemed to be needed.

The nuclear elite is perhaps the most exclusive club in the world. Its members dominate nonproliferation policy, both national and international, if, in fact, it can be called nonproliferation policy. Proliferation nonpolicy might be the more suitable term.

Even during the Carter administration, when there was an early effort by the President to turn that policy around, or at least to follow up where President Ford left off, there was very concerted opposition

from within the U.S. nuclear industry and most elements of the career bureaucracy. This was especiadlly manifest at the Persepolis Conference in Iran, the Third-World Nuclear Conference in 1977, where representatives of the American industry heckled U.S. Government representatives who were attempting to make the technical and political case to the Third World for forgoing plutonium and other weapons-sensitive fuel technologies and reactors.

There is another real world that the Reagan administration is the real world that those of us who are worried about a plutonium future are trying to prevent. It is a world not dominated by present-day political disagreements with close allies over nonproliferation policy, but by widespread nuclear violence as plutonium and highly enriched uranium accumulate by the ton in world commerce. In the absence of effective international safeguards, based on all that we know about the technical and political constraints on these safeguards, we can look forward to dictators and terrorists gaining access to loosely safeguarded weapons-grade materials in commerce—materials produced by the ton that can be used by the pound to make atomic bombs.

We see in such a future a clear and present danger to the national-security interests of the United States sufficient to warrant a much tougher nonproliferation stance with our closest allies today.

It should be stressed that the dangerous programs being staunchly defended and promoted by the nuclear elite in Western Europe and Japan are not nearly as well established as the industry would have us believe. Even in France, where the breeder program is perhaps the strongest and most advanced, enormous economic difficulties are being encountered. EDF, the French national utility, has let it be known that they will make no commitments to order of breeder reactors until the demonstration breeder, the Super-Phenix, operates successfully for at least 1 year, and then they would want to look at the economics as well as the technical aspects.

The nuclear program in Germany is moribund, and in Japan, there is by no means wide popular support for the breeder and reprocessing programs which are experiencing vast cost overruns and technical difficulties.

If, in fact, nonproliferation could be moved to the forefront of our agenda with other nations—similar to the way the Japanese raised the Tokai Mura reprocessing plant to the highest level of their political agenda with the United States in 1977—it may still be possible to stem the flood tide of plutonium that is sure to result if these dangerous programs go forward.

I now would like to direct the committee's attention to one particularly disturbing element of the Reagan policy pertaining to the Tokai Mura reprocessing plant in Japan. A careful look at the legislative history of Section 131b. of the Nuclear Nonproliferation Act shows that the Congress had a very specific technical test in mind with regard to the executive branch making a "timely warning" determination—that is, a determination that safeguards of the International Atomic Energy Agency being applied to foreign reprocessing of U.S.-origin spent fuel could provide timely warning between the time of a diversion of separated plutonium and the actual fabrication of a nuclear weapon with the plutonium.

It appears that the administration made an improper technical finding of its timely warning determination last year when it approved

a continuation of the operation of Tokai Mura for a 4-year period during which some 210 tons of spent fuel could be put through that plant annually.

I would like to put into the record the pertinent portions of the House report stated that "the Committee on Foreign Affairs expects It was not altered substantially by the Senate, and it was noted when the House passed the Senate version of the bill that the timely warning standard as originally passed by the House remained intact. The House report stated that "the Committee on Foreign Affairs expects the Administrator"—that was the Administrator of ERDA, now the Secretary of Energy—"to assure that warning times would exist that are at least roughly equivalent to those that can be obtained when spent low enriched reactor fuel is placed under verified storage in countries not possessing a reprocessing capability."

The House report further stated that the administrator was to assume "that the party in question could already have done work in nuclear weapons research, design, and fabrication, so that the sole remaining need would be that of the weapons-usable material itself."

With your permission, Mr. Chairman, I would like to insert that portion of the report dealing with timely warning into the record.

[The material referred to follows:]

SECTION 501—SUBSEQUENT ARRANGEMENTS

Section 501 of the bill sets forth certain procedures which must be followed and findings which must be made before the ERDA Administrator can approve subsequent arrangements. These subsequent arrangements are specific contracts, approvals, authorizations and other arrangements required to implement an agreement for cooperation, and they pertain to such activities as the retransfer and reprocessing of U.S. supplied special nuclear material.

Section 501(a) requires the ERDA Administrator to obtain the concurrence of the Secretary of State and the views of the other concerned agencies, including the NRC, before entering into any such arrangement. Section 501(b) of the bill addresses the specific arrangements associated with the reprocessing of U.S. supplied source or special nuclear material, or materials used in or produced through the use of exported utilization facilities, production facilities or sensitive nuclear technology.

The decisions authorizing these arrangements are often critical to the effective control of nuclear materials and technology and thus of fundamental importance to U.S. nonproliferation policy. The committee has been distressed to learn of past instances in which determinations on subsequent arrangements were made in a casual and sometimes inconsistent fashion. This section mandates a formalized process of interagency review and consultation in order to insure that these decisions receive the thoughtful and systematic review they so obviously deserve.

For the processes of review set forth in this section to be effective, it is essential that the concerned agencies be notified early enough in the decisionmaking process for them to be able to provide a meaningful and considered response.

Because these arrangements have the potential for importantly affecting the bilateral relationship between the United States and the cooperating parties, and because of the significance such arrangements hold for antiproliferation policy generally, the committee has required the Secretary of State's formal concurrence on all such arrangements, other than those which are defense related. The committee fully expects that the Secretary not only concur but will play an active role in the scrutiny of these matters.

The committee is also particularly committed to having the NRC continue to provide independent assessment and validation of decisions to enter into subsequent arrangements.

Subsection (b)(1) establishes new procedures for congressional review over the most important set of subsequent arrangements by requiring that at least 15 days prior to approving any arrangement for the retransfer for reprocessing, for reprocessing itself, or for the retransfer of plutonium in quantities greater than

500 grams resulting from such reprocessing, the Administrator shall provide the appropriate committees of the Congress with a report containing his reasons for entering into such arrangements.

Subsection (b)(2) provides that before the Administrator can approve reprocessing in a facility which had not been in commercial operation prior to the date of enactment of this act, he must find that such reprocessing and the subsequent retransfer of plutonium in quantities greater than 500 grams resulting from such reprocessing, will be done under conditions that are designed to ensure that standards for "reliable detection" of diversion and for "timely warning" of such diversion are met.

Timely warning has to do with that interval of time that exists between the detection of a diversion and the subsequent transformation of diverted material into an explosive device. Reliable detection refers not only to the act of determining that material has been diverted but to the prompt and reliable notification of a confirmed diversion to supplier states and to the international community.

It is impossible to specify with absolute precision how long the interval of warning time described above would have to be in order to satisfy the standard set forth in this section. Upon completion of the International Nuclear Fuel Cycle Evaluation, it should be possible to know which of a number of alternatives to conventional reprocessing would most optimally fulfill the timely warning requirement and to know as well the amount of warning time such alternative could provide. At a minimum, however, it is clear that the existing conventional reprocessing technologies, that is, those that result in the production of weapon-usable plutonium fail to meet the committee's prescribed standard; *for*, as has been frequently explained, one could not confidently expect warning times of more than a few days or weeks with such technologies. Until such time, then, as this act may be amended on the basis of the findings of the International Fuel Cycle Evaluation, the committee expects the Administrator to assure that warning times would exist which are at least roughly equivalent to those that can be obtained when spent low enriched reactor fuel is placed under verified storage in countries not possessing a reprocessing capability.

It is the intent of the committee that these standards be applied to all facilities which were not "in commercial operation" prior to the enactment of this act and that this term be construed in such a manner as to cover all foreign reprocessing facilities which, prior to the enactment of this act, have not processed power reactor fuel assemblies.

In applying the timely warning standard, the committee expects the Administrator to assume that the party in question could already have done work in nuclear weapons research, design, and fabrication, so that the sole remaining need would be that of the weapons usable material itself. The committee also expects the Administrator to assure that the standard would apply in the instance of each of a number of credible possibilities, that is, with respect to the threat of terrorist diversion, to clandestine diversion by nations, and to outright national abrogation of agreements with subsequent appropriation of the facilities and materials in question. The committee is pleased that work is going forward on technologies which could permit this standard to be met. It is of concern, however, that some of the alternatives now receiving the most prominent attention would provide timely warning only in the case of terrorist theft and not in the case of diversion or appropriation by national governments.

The committee further expects that the Administrator's assessment will take into account not only the proliferation resistance of the reprocessed product, but also the case with which a modified fuel processing facility could be reconverted to the production of weapons usable material. In this regard the committee takes note of testimony provided by the Arms Control and Disarmament Agency to the effect that "[co-processing] plants that fully decontaminate the product and raise the plutonium concentration would be the easiest for producing weapons usable material; such material might be produced merely by adjusting the mass flows."

Subsection (b)(3) requires the Administrator of ERDA to attempt to assure that facilities initially exempted from these requirements, that is, facilities that had been "in commercial operation" prior to the enactment of this Act, and any expansion of such facilities, are modified so as to meet the standards referred to above. The committee attaches particular importance to this requirement.

The Zablocki-Findley amendment of 1976 would have applied the standards set forth above immediately and comprehensively. This bill attempts to achieve the same end, but allows for a certain degree of flexibility in the interim period. The committee assumes, however, that the United States will enter into reprocessing

arrangements in the interim only in those cases where a compelling need can be demonstrated, as for instance, to alleviate an extremely difficult spent fuel storage situation for which no other alternative seems feasible.

Should the Administrator enter into such an arrangement, the committee expects his report to the Congress will contain a detailed discussion of the spent fuel storage solutions proposed by the United States as alternatives to reprocessing and the reasons why such alternatives were determined to be not acceptable.

Timely warning—Background and purpose

It has long been officially recognized that safeguards would not be effective if their warning of diversion did not come well in advance of the final fabrication of the diverted material into an explosive device. It was understood that safeguards functioned essentially as monitoring devices, not locks, but it was hoped that by warning early enough they might still serve to deter diversion by raising in the potential violator's mind the risk of an international response capable of frustrating his final purpose.

As stated previously, warning times of acceptable duration can theoretically be achieved in the case of spent low enriched reactor fuel that has been placed under verified storage in countries not possessing reprocessing facilities. Although weapons usable material contained in such fuel, the total product is highly radioactive, hard to handle, and therefore at least in part self-securing. Should such material be diverted, the monitoring devices would signal the diversion at a point when the plutonium was still many time-consuming steps away from insertion in an explosive device—perhaps years and almost certainly many months. Thus, it can be seen that security depends as much on the condition of the safeguarded material as on the quality of the safeguarded devices themselves.

Conventional reprocessing technologies result in direct access to weapons usable material and therefore do not permit timely warning comparable to the more proliferation resistance situation cited above. In fact, such conventional processes as PUREX were designed specifically to produce high quality plutonium for U.S. weapons and not for application as part of the commercial fuel cycle of a nonnuclear weapon state. It is therefore not surprising that modifications are required in order to provide technologies suitable for use in civil atomic energy programs.

Mr. ROUSSELOT. Mr. Speaker, reserving the right to object, will the gentleman explain to us if anything done in conference was substantially different from what we did in the House?

Mr. ZABLOCKI. Mr. Speaker, will the gentleman yield?

Mr. ROUSSELOT. I yield to the gentleman from Wisconsin.

Mr. ZABLOCKI. Mr. Speaker, I will advise the gentleman from California this is not a conference report. We are accepting the Senate amendment. The Senate has in no way changed substantially the bill that passed last year by a vote of 411 to 0 and passed the Senate by a vote of 88 to 3. The amendments that the Senate has adopted clarify some of the positions and policies and intent of the House.

Mr. ROUSSELOT. Further reserving the right to object, the gentleman can assure us that there are no changes in the House-passed version?

Mr. ZABLOCKI. There are no substantial changes from the House-passed version. All of the central elements of the House bill—including the important "timely warning" criterion—were faithfully preserved. There is no money involved. The ranking minority member of the committee as well as the other Republicans who are here can concur with the statement that there are no important differences. The changes made by the Senate served primarily only to clarify and further streamline the licensing process.

Mr. LEVENTHAL. In making previous determinations that the Japanese could go forward with very limited work at Tokai Mura—limited both in terms of duration of time and quantities of material—the Carter administration never made a technical finding that safeguards providing timely warning could be applied. Instead, the previous administration made a strictly political determination—based on an assessment of Japan or a close ally with no nuclear weapons program—that limited reprocessing "will not result in a significant increase of the risk of proliferation."

Although it presumably gave foremost consideration to the technical "timely warning" question, the Carter administration relied solely on the political "proliferation risk" test in approving limited reprocessing at Tokai Mura. In other words, the Carter administration relied solely on its political assessment of Japan, not on technical assessment of safeguards at the Japanese reprocessing plant.

The Reagan administration, however, has gone beyond the political "proliferation-risk" determination to a technical "timely warning" safeguards determination, and has approved not a limited reprocessing program, but a full-scale one, at Tokai Mura. This was testified to by Harry Marshall at the House hearing on the subject last October. And I will just quote briefly from that testimony.

In response to a question from Representative Bingham, "Do you feel that the timely warning standard will be met in the Tokai Mura plant?" Mr. Marshall replied: "Yes, we feel that the requirement of section 131 is satisfied under the terms of this subsequent arrangement. We did give, as required by the statute, foremost consideration to that factor. But we also took into consideration the situation with Japan and the risk of an increase in proliferation."

Then the following exchange took place:

Mr. BINGHAM. I understand that. But I am asking you really a narrower question at this point. The question is, assuming there were a diversion that was not detected, how much time would there be before action was taken to prevent the misuse of that plutonium? That is what the timely warning standard is all about.

Mr. MARSHALL. In the case where such misuse were not detected, we couldn't do much until we realized that something had happened. But we feel that, given the circumstances, the size of the reprocessing plant, the safeguards that the IAEA imposes at the facility, the nature of the material accountancy process there, our diplomatic relationship with Japan, in sum, the whole ball of wax, that if there was a diversion of significant quantity we would know about it in time to do something diplomatically before a device could be fabricated.

Such a thing is hard to imagine in any event in the case of Japan, given their dedicated opposition to explosive uses of nuclear energy. But nevertheless, we feel that if such an extremely unlikely event were to happen, we would be able to do something about it.

If, in fact, the safeguards are not adequate to provide timely warning at Tokai Mura, then an improper determination was made by the administration. I cite a Japanese document reporting on the results of the TASTEX project—that was the joint U.S.-Japanese safeguards development project that was referred to by the administration witness—where it is reported in the PNC [Power Reactor and Nuclear Fuel Development Corporation of Japan] News and Reports of July 1981, that the TASTEX program has been completed and that 13 tasks in terms of safeguards development were to be tested to determine whether IAEA standards could be achieved through the safeguard research and development.

And according to the Japanese:

Of the 13 tasks, only 3½ had shown to be technically feasible for IAEA safeguard applications, and that, with regard to the other items, further development works were needed.

It is instructive to see what was not accomplished in terms of meeting IAEA safeguards standards. I do not want to lay a lot of technical information on the committee, but I will just cite a few tasks still requiring further development.

One is "surveillance devices in the spent fuel receiving and storage area," a key element to safeguarding a reprocessing plant. Another is "nondestructive analyses of spent fuel assemblies," essential for determining actual plutonium content of spent fuel. Two others are "monitoring in the plutonium product area" and "near real-time accounting system," which lay at the heart of the safeguards, at least from the standpoint of the observing and auditing of the materials going in, through, and out of a plant.

I would like to leave that PNC material with the committee.

[The material referred to follows:]

[From PNC News and Reports, Nuclex Edition, Tokyo, Japan, July 1981]

REPROCESSING TECHNOLOGY NOW ON THE STAGE OF PRACTICAL APPLICATION

GENERAL

For conducting R&D on reprocessing technologies, which is a key factor for establishment of nuclear fuel cycles, PNC selected the Chop-Leach Head-End and Purex Process, and constructed, in 1974, the 0.7 t/y Tokai Reprocessing Plant at its Tokai Works. The plant is designed to produce uranium trioxide powder and plutonium nitrate solution, as its final products, from spent LWR fuels. These products are being used as source materials for fabrication of mixed oxide fuel assemblies.

After completion of various inspection works and of operator training, the plant was put to hot-tests using actual fuels from Japanese LWR power plants in September 1977.

Following the hot-tests, several campaigns of pre-guarantee and guarantee test for the plant were carried out between 1979 and 1980.

On December 25, 1980, a government license for the regular operation of the plant was granted by the Minister of State for Science and Technology, after which regular operation was started.

OPERATION OF REPROCESSING PLANT

Hot-tests of the plant

Milestones along the way to regular operation of the reprocessing plant were as follows. The hot-tests of the plant were planned to be carried out in four campaigns, and three and part of the fourth campaign were completed by August 1978. In its first campaign, started in September 1977, 3.3-t of spent fuels with an average burnup of 4,000 MWD/t from the Japan Demonstration Power Reactor were reprocessed; 4.7-t of BWR's spent fuels with an average burnup of 10,000 MWD/t from the Fukushima Nuclear Power Plant of the Tokyo Electric Power Co. for the second campaign started in February 1978, 6.4-t of PWR's spent fuels with an average burnup of 15,000 MWD/t from the Mihama Nuclear Power Plant of the Kansai Electric Power Co. for the third campaign started in May 1978, and 4.7-t of PWR's spent fuels with an average burnup of 11,000 MWD/t for a part of the fourth campaign started in August 1978, were reprocessed.

However, the fourth campaign was interrupted due to the discovery of defects in the boiler part of the acid recovery evaporator. Installation of a new evaporator was completed in September 1979. After completion of inspection work and cold-tests of the new evaporator, the plant operation was restarted in September, 1979.

Guarantee tests of the plant

The remaining part of the fourth campaign in which it was planned to reprocess 5.2-t of both PWR's spent fuels with an average burnup of 15,000 MWD/t, was carried out as the first part of the guarantee test to prove the performance of the plant before delivery from the contractor, and as a pre-guarantee test to familiarize the operator with the plant after its year-long interruption of operation.

Following these works, 6.8-t of PWR's spent fuels with an average burnup of 22,000 MWD/t (30,000 MWD/t max.) were reprocessed in the course of the

latter part of the guarantee tests. On account of a revision of the Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors in force since April 1980, the plant was subjected to a governmental licensing inspection on performance, for which purpose two series of campaigns were conducted. The first campaign, from April to July, was carried out to obtain the official government approving using 28.5-t of BWR's spent fuels with an average burnup of 12,000 MWD/t (20,000 MWD/t max).

The second campaign, from September to December, was carried out using 20-t of PWR's fuels with an average burnup 22,000 MWD/t (20,000 MWD/t max). On December 25, 1980, the government license was granted for regular operation of the Tokai Reprocessing Plant.

Regular operation of the plant

The regular operation of the plant was started in January 1981 according to the reprocessing program, in which it was planned to treat about 50~70-t of BWR's spent fuels in 125 days

However, on completion of reprocessing for 6.6-t of spent fuels, plant operation was interrupted due to a defect in the heating steam tubes of the acid recovery refiner in February 1981, for which repair work was started immediately.

After completion of the repair, replacement of heating parts of tubes, and inspection work, the plant was put back into operation, and the program was completed in June 1981, with reprocessing of about 20-t of BWR's spent fuels. The reprocessing quantities of spent fuels in the plant amounted to about 106-t between 1977 and June 1981.

Throughout the hot-tests, guarantee-tests and regular operation of the plant, PNC has gained essential technical know-how in relation to operation, maintenance, adjustment, etc. of the plant. For instance, PNC has established valuable hot-maintenance know-how through its experience in successfully solving the problem of defective acid recovery units.

The reprocessing quantities of spent fuels are within the framework of 149-t that was agreed to in Japan-U.S. Joint Determination of 1977 and its amendment of 1981.

R&D ON KR-RECOVERY TECHNOLOGY

PNC has been conducting various R&D on technologies for reducing the exhaustive radioisotope to the environment. As an example, PNC is constructing a large-scale Kr-Recovery Pilot Plant, which will recover the krypton from off-gas, which is generated in the head-end process, shearing and dissolution, by the cryogenic process. Construction of the pilot plant is to be completed by March 1982, and its demonstration operation will be unique in the world at the time.

TASTEX PROGRAM COMPLETED

Non-proliferation of nuclear materials related to the reprocessing facilities is of vital significance. In this regard, the TASTEX (Tokai Advanced Safeguard Technology EXercise) program, a unique international project involving the cooperation of Japan, U.S.A., France and IAEA, was carried out at the Tokai Reprocessing Plant between 1977 and 1981.

The program consisted of 13 Tasks from A to M items, as follows: A) surveillance devices in the spent fuel receiving and storage area, B) non-destructive analyses (NDA) of spent fuel assemblies, C) NDA of hulls, D) load cell technique for measurement of solution weight in the accountability vessels, E) electromanometer for measurement of solution volume in accountability vessels, F) near real-time accounting system. G & H) K-edge densitometer and high resolution gamma spectrometer for measurement of plutonium product concentration and isotope composition, I) monitoring in the plutonium product area, J) resin-bead sampling and analytical technique, K) isotope safeguards correlation techniques, L) gravimetric (Pu/U ratio) method for input accountability, and M) tracer methods for input accountability vessel calibration.

At the final meeting of the TASTEX Joint Steering Committee, which was held in May 1981 in Japan, it was decided that the program had been completed. The Committee agreed that the technique developed under Tasks E, G, H and a part of Task A had shown to be technically feasible for IAEA safeguard applications, and that, with regard to other items, further development works were needed.

The Committee also recognized the essential role of the Government of Japan and PNC, which played significant parts of the program, in making the Tokai Reprocessing Plant available for tests and demonstration of the TASTEX.

Mr. LEVENTHAL. So by the Japanese own acknowledgment, the safeguards in that plant are still incapable of achieving the types of results that would permit a timely warning determination to be made. I bring this point to the committee's attention in the hope that it might pursue the matter and at least get from the administration an explanation as to what the technical basis—not the political basis, but the technical basis—of that determination is. The committee should also explore the implications for legitimizing clearly dangerous reprocessing activities that other nations as well as Japan are going to want to pursue on the basis of the TASTEX program.

I think I have used up my time, so what I will do in conclusion is, if I might, cite another letter that was sent by members of the Working Group to members of this committee and to House members who have an interest in the proliferation problem. It is what we termed at that time a basic principles letter. It established a set of basic principles that should guide U.S. nonproliferation policy. I ask that this letter be made a part of the record as well.

[The letter referred to follows:]

FEBRUARY 2, 1982.

HON. ALAN CRANSTON,
U.S. Senator,
The Capitol, Washington, D.C.

DEAR SENATOR CRANSTON: Events of the past year have dramatically revealed both a lack of confidence in current safeguards and the continuing deterioration of barriers against the proliferation of nuclear explosives.

The Israeli attack on an Iraqi research reactor is stark evidence of the extent to which many countries are (and will be) unwilling to place their trust in international safeguards measures.

The Department of Defense is on record within the Reagan Administration as cautioning against "undue reliance" on international safeguards by those responsible for national security within the United States Government. The Pentagon expressed "reservations about the effectiveness of IAEA (International Atomic Energy Agency) Safeguards and the weakness of the IAEA as an international institution."

The admission by the International Atomic Energy Agency that it can no longer verify that civilian nuclear materials under the control of the government of Pakistan have not been diverted to weapons purposes—and the lack of an effective response by the U.S. Government to this revelation—indicates just how easy it is to pursue a military nuclear explosives policy and get away with it.

The Nuclear Regulatory Commission recently informed Congress that it is "concerned that the IAEA safeguards system would not detect a diversion in at least some types of facilities" and that it is "not confident that the member states would be notified of a diversion in a timely fashion."

The Department of Energy seems embarked upon a course to weaken or destroy whatever barriers exist to the spread of nuclear explosives. Plutonium, once reprocessed from spent fuel is a nuclear explosive directly usable in nuclear weapons. It is widely recognized that reprocessing and other facilities handling plutonium in bulk cannot be adequately safeguarded. Nevertheless, the Department of Energy has endorsed plutonium reprocessing.

The Energy Department also has suggested that plutonium generated in the civilian nuclear fuel cycle might be extracted for use in weapons programs. It has permitted continuing supplies of nuclear fuels to Brazil, although that country refuses full-scope safeguards. It appears to place "reliability of supply" above all other priorities, including "reliability of customer." A former repre-

sentative of foreign nuclear clients has been appointed to run the non-proliferation program in the State Department.

It would be tragic if this drift toward a proliferated world were to proceed without challenge. Despite all ominous signs, there is still precious little time left to control the spread of nuclear explosives. There are today 140 tons of plutonium worldwide locked up in spent fuel, about half of it outside the United States. If most of that plutonium can be kept out of commerce, then there still may be a chance to halt the spread of nuclear weapons and nuclear terrorism.

It is thus essential to reassert now the principles of a sound nuclear explosives control policy. At least ten such principles deserve support:

(1) *Commercial Use of Plutonium Must Be Banned.*—Plutonium—the wherewithal to make a bomb—is now the central plutonium risk. The Nuclear Non-Proliferation Act does not bar plutonium reprocessing, and, obviously, the Energy Department and nuclear industry are not about to refrain voluntarily. As of now, no commercial reprocessing is taking place in the United States. Commercial reprocessing is under development on a large scale in Britain, France, Japan and West Germany, but major commercial production of separated plutonium has not yet begun. It is still possible, therefore, to keep most plutonium out of the civilian nuclear fuel cycle in separated, weapons-usable form. What must be done is for Congress to mandate clearly that commitments to this dangerous technology will not be tolerated. Not only must commercial reprocessing not be permitted in the United States, but it also must be curtailed abroad, in weapons states as well as in non-weapons states, and the United States should not approve any reprocessing of U.S.-supplied fuel.

(2) *Commercial Development of Dangerous New Technologies Must Not Be Permitted.*—Research is proceeding apace to perfect laser, centrifuge and other advanced enrichment technologies, which would allow the rapid and relatively cheap production of weapons grade uranium and plutonium. If these technologies become commercially available, proliferation risks will become virtually uncontrollable. At this time, few restraints have been placed on development of these technologies. The development should in fact be halted, except insofar as military applications are essential for national security, and United States nuclear trading partners should be dissuaded from developing, utilizing or exporting it themselves.

(3) *Commercially Generated Plutonium Must Not Be Used In Military Nuclear Programs.*—One of the most dangerous suggestions made by the Energy Department is that the United States government might relieve utilities of the burden of spent fuel by purchasing that fuel and recycling plutonium for use in weapons programs. This proposal, if implemented, would destroy the basic principle of the Atoms for Peace program that civilian and military uses of nuclear power must be separated. The example of the United States using civilian facilities for military purposes would mark the end of any credible non-proliferation policy. It must not be allowed to happen.

(4) *Access To Spent Fuel Must Be Controlled.*—Even if reprocessing does not occur, it is still necessary to control access to spent fuel. The Nuclear Non-Proliferation Act does little to address this problem. Nonetheless, it is obvious that there are certain environments in which the presence of spent fuel is simply too risky. Because Congress is now grappling with the overall nuclear waste management problem, it is timely to consider the need to control foreign spent fuel and elaborate a viable system to prevent the stockpiling of plutonium-bearing wastes in non-weapons states.

(5) *Trade In Weapons-Usable Material Must Be Curtailed.*—The Nuclear Non-Proliferation Act does not prohibit export or acquisition of strategically significant quantities of highly enriched uranium and plutonium. Yet there is a basic proliferation risk that a country or terrorist group will obtain such materials and apply them to violent ends if international commerce in these materials is permitted to continue and to increase. The Iraqi raid demonstrates just how real this risk is perceived to be. Thus, efforts must be made to phase out the use of highly enriched uranium in research reactors and, thereafter, not permit the movement of weapons-usable materials in international commerce.

(6) *Economic Sanctions Must Be Made Available Against Countries Violating Non-Proliferation Principles.*—The policy of simple persuasion, and even of gentlemanly arm-twisting, has not had remarkable success in controlling the spread

of nuclear explosives. Nor is the mere threat of a cutoff of U.S. trade, as provided in the Nuclear Non-Proliferation Act, sufficient to deter certain countries from embarking on a course, or from helping other countries to embark on a course, that could lead to the development of nuclear weapons. More substantial economic sanctions must be imposed on countries that violate non-proliferation principles. Thus, for example, mandatory trade embargoes, of either general or limited nature, should be provided for in the case of a violation of such principles. While one can debate the effectiveness of sanctions once imposed, there seems little doubt that the *possibility* of their invocation will have a significantly greater deterrent than anything in current law.

(7) ***Nuclear Trade Must Not Continue Without Effective Safeguards.***—The Nuclear Non-Proliferation Act is not clear as to whether the NRC must determine that safeguards are "effective" before approving the export of a nuclear power plant or other nuclear equipment or materials. The NRC now simply determines, prior to issuing an export license, that IAEA safeguards will be applied. However, the NRC is required under the Atomic Energy Act to determine that any activity it licenses, including exports, is "not inimical to the common defense and security" of the United States. Consequently, Congress should urge the NRC to withhold exports for which a "safeguards effectiveness" finding cannot be made. The Non-Proliferation Act should be strengthened to require such a determination by the NRC, if necessary. The Act also should be revised to require that the Defense Department certify to the President the same "effectiveness" finding regarding safeguards.

(8) *All Nuclear Transfer And Retransfer Authority Must Be Consolidated In the Nuclear Regulatory Commission.*—At present, authority for approving nuclear transfers is divided among the NRC and the Departments of Energy, Commerce and State. Although NRC must license export nuclear power plants, the most sensitive transfers and retransfers of U.S. nuclear materials, equipment and know-how are done by Executive Branch agencies with little, if any, scrutiny by the public or the Congress. The Reagan Administration is now actively considering transferring all nuclear export authority to the Department of State, the principal promoter of U.S. nuclear trade. This would be akin to putting the fox in charge of the chicken coop. Instead, in the context of the upcoming reorganization of the Department of Energy, Congress should transfer all nuclear export authority to the NRC—an independent regulatory commission intended by Congress to serve as an independent check on the nuclear-promotional activities of the Executive Branch.

(9) *The United States Must Work With Other Nuclear Suppliers To Strengthen Guidelines Against Proliferation.*—The Nuclear Suppliers Conference, organized by the United States in 1975, has been inactive for the past few years. The guidelines it promulgated before disbanding are rife with loopholes permitting the export of sensitive nuclear materials and equipment to non-nuclear weapons countries. The export of reprocessing and enrichment equipment to Pakistan for a nuclear weapons program is the most blatant example of the weaknesses of the nuclear-suppliers guidelines. Congress should require the President to seek to reconvene the Nuclear Suppliers Conference and to report back regularly to the Congress on his progress or lack thereof. Economic sanctions as provided in (6) above should be made available to the President for leverage in the Nuclear Supplier talks.

(10) *Linkage Between the Global Spread of Nuclear Weapons and the Superpowers Arms Race Should be Clearly Established.*—Congress should go on record as clearly acknowledging that ultimate success in non-proliferation efforts hinges on superpower agreement on the Comprehensive Test Ban Treaty and on meaningful progress in sharply reducing their nuclear arsenals.

We believe the foregoing principles represent the essential elements of a comprehensive approach to effective control of nuclear explosive materials—both domestic and international. Such an approach is long overdue and provides the only real hope that nuclear commerce can be prevented from degenerating any further to proliferation of nuclear weapons.

Consequently, we urge you to give prompt and close consideration to these principles and to incorporate them into comprehensive legislation—the *Nuclear Explosives Control Act of 1982*—to give them the full force of law. We would be pleased to meet with you and assist you in preparing this legislation. Such a

bill would serve as the needed catalyst for several committees of jurisdiction to deal swiftly and effectively with the world-threatening and accelerating spread of nuclear explosive materials.

Sincerely,

Paul Leventhal, The Nuclear Club Inc.; William Adler, Americans for Democratic Action; Renee Parsons, Friends of the Earth; Virginia B. Foote, Center for Development Policy; Mark Roberts, Greenpeace; Jean Sindab, Washington Committee on Africa; S. Jacob Scherr, Natural Resources Defense Council; D. Barton Doyle, Ripon Society; Christopher N. Palmer, National Audubon Society; Robert Alvarez, Environmental Policy Center; Gary Itzkowitz, Nuclear Information and Resource Service.

[Mr. Leventhal's prepared statement follows:]

PREPARED STATEMENT OF PAUL L. LEVENTHAL

Mr. Chairman, I appreciate this opportunity to testify this morning on behalf of Nuclear Control Institute. I am Paul Leventhal, president of Nuclear Control.

We are a relatively new organization that is working exclusively on seeking to prevent the horizontal spread of nuclear weapons. We have among our Board members several specialists on the subject of proliferation, including Dr. Theodore Taylor, a former nuclear weapons designer; Admiral Tom Davies, formerly Non-Proliferation Chief of the Arms Control and Disarmament Agency; Peter Bradford, formerly a member of the NRC and now Chairman of the Maine Public Utilities Commission; and Dennis Hayes, who was the Director of the Solar Energy Research Institute during the Carter Administration, and himself a specialist on proliferation issues.

The Institute chairs an informal Working Group on Nuclear Explosives Control Policy, which is made up of several public-interest organizations that have an interest in this problem. I would like to put into the record a letter that was sent by some 24 members of the Working Group requesting the hearings that you are holding today on the non-proliferation policy of the Reagan Administration. That letter, which was sent in June, was prompted by the knowledge that emerged at that time of this Administration's reprocessing and plutonium-use policy, so-called.

In my remarks, I will comment generally on the non-proliferation policy of the Reagan Administration, focusing on principal differences and similarities with previous policy. I will explore some of the assumptions that underlie the Reagan policy. Then briefly, I will look at one particular element that we find particularly disturbing, since it seems directly to undercut one of the most significant provisions of the Nuclear Non-Proliferation Act: the required consideration by the Executive Branch of whether international safeguards can provide "timely warning" of a diversion of weapons-usable plutonium. Such consideration must be made in connection with any U.S. approval of reprocessing of U.S.-supplied fuel or with any transfer of such spent fuel for reprocessing. And finally, I will take a brief look at what might still be done to try to bring the proliferation problem under control.

Regarding the Reagan policy, the principal difference, the most important difference that is basic to all other aspects of the policy, is the Administration's attitude toward plutonium. We must be very clear on this. The Reagan Administration views plutonium as a legitimate civilian fuel, and is promoting reprocessing and plutonium-use both at home and abroad. This was made clear in the non-proliferation policy statement of July of last year, followed up by the domestic nuclear policy statement in October.

The most important similarity to previous policy is this administration's all-out effort to accommodate the Japanese and the West Europeans, a process that began in earnest in the final year of the Carter Administration on the assumption that our West European and Japanese allies could not be persuaded to follow our example with respect to discouraging reprocessing, plutonium-use and development of advanced reactor and fuel-cycle technologies.

In this sense, the Reagan policy is a direct evolution from where the Carter policy left off at the end of that administration. In both respects—the key differ-

ence and the key similarity—the net effect is a drastic undermining of the United States' commitment to non-proliferation as originally developed by Presidents Ford and Carter, and as embodied in the Nuclear Non-Proliferation Act.

The likely outcome, unless Congress reasserts its watchdog role, is the rapid spread of separated plutonium, and the technology for producing it, throughout the world. This plutonium will accumulate in amounts equivalent to thousands, eventually tens of thousands, of atomic bombs. And just over the horizon is the spread of highly enriched uranium and the advanced centrifuge and laser technologies for producing it cheaply and efficiently. This equally dangerous problem may prove to be inevitable because the Reagan Administration seems bent on promoting, possibly even exporting, those technologies or the components of those technologies as well.

Central to the direction of the Reagan policy is a set of assumptions as to what constitutes the so-called "real world," as described by Under Secretary of State Kennedy in some of his speeches on how to deal with those realities.

For the Reagan Administration and for the nuclear bureaucracy that has guided its policy, the real world is dominated by the staunch resistance of the West Europeans and the Japanese to our non-proliferation efforts.

There is a perceived need to accommodate their demands for plutonium and sensitive technologies in the hope of winning their cooperation in denying these weapons materials and technologies to others.

This supposed political realism is based on the assumption that the spread of nuclear weapons is inevitable, and that our only hope is to try to manage, not to prevent, it.

I would like to point out, however, that the real world they speak of is largely of their own making. It is made up of a very small but powerful nuclear elite in the United States and in western European countries and Japan—an elite, it should be noted, that does not have a popular base of support, that operates largely in secrecy, and that is perpetuated in these countries by virtue of the infrastructure it provides: a nuclear-power infrastructure to be sure, but also the infrastructure needed to produce nuclear weapons if nuclear weapons are ever deemed to be needed.

The nuclear elite is perhaps the most exclusive club in the world. Its members dominate nonproliferation policy, both national and international, if in fact, it can be called nonproliferation policy. Proliferation nonpolicy might be the more suitable term.

Even during the Carter Administration when there was an early effort by the President to turn that policy around, or at least to follow up where President Ford left off, there was very concerted opposition from within the United States nuclear industry and most elements of the career bureaucracy. This was especially manifest at the Persepolis conference in Iran, the Third World nuclear conference in 1977, where representatives of the American industry heckled U.S. Government representatives who were attempting to make the technical and political case to the Third World for foregoing plutonium and other weapons-sensitive fuel technologies and reactors.

There is another real world that the Reagan Administration has not faced. It is the real world that those of us who are worried about a plutonium future are trying to prevent. It is a world no longer dominated by political disagreements with allies over non-proliferation policy, but by widespread nuclear violence as plutonium and highly enriched uranium accumulate by the ton in world commerce. In the absence of effective international safeguards, based on all that we know about the technical and political constraints on these safeguards, we can look forward to dictators and terrorists gaining access to loosely safeguarded weapons-grade materials in commerce—materials produced by the ton that can be used by the pound to make atomic bombs.

We see in such a future a clear and present danger to the national-security interests of the United States sufficient to warrant a much tougher non-proliferation stance with our closest allies today.

It should be stressed that the dangerous programs being staunchly defended and promoted by the nuclear elite in Western Europe and Japan are not nearly as well established as the industry would have us believe. Even in France, where the breeder program is perhaps the strongest and most advanced, enormous economic difficulties are being encountered. Officials of EDF, the French national utility, have let it be known that they will make no commitments to order

breeder reactors until the demonstration breeder, the Super-Phenix, operates successfully for at least one year, and then they would want to look at the economics as well as the technical aspects.

The nuclear program in Germany is moribund, and in Japan, there is by no means wide popular support for the breeder and reprocessing programs, which are experiencing vast cost overruns and technical difficulties.

If, in fact, nonproliferation could be moved to the forefront of our agenda with other nations—similar to the way the Japanese raised the Tokai Mura reprocessing plant to the highest level of their political agenda with the United States in 1977—then it may still be possible to stem the flood tide of plutonium that is sure to result if these dangerous programs go forward.

I now would like to direct the Committees' attention to one particularly disturbing element of the Reagan policy pertaining to the Tokai Mura reprocessing plant in Japan. Under Section 131b. of the Nuclear Non-Proliferation Act, reprocessing of U.S.-origin spent fuel at Tokai Mura is a "subsequent arrangement" that cannot be approved until the Executive Branch determines that such reprocessing "will not result in a significant increase of the risk of proliferation beyond that which exists at the time that approval is requested." In making that determination, "foremost consideration (must) be given to whether or not the reprocessing . . . will take place under conditions that will ensure timely warning to the United States of any diversion well in advance of the time at which the non-nuclear weapon state could transform the diverted material into a nuclear explosive device."

A careful look at the legislative history of the Nuclear Nonproliferation Act shows that the Congress had a very specific technical test in mind with regard to the Executive Branch making a "timely warning" determination—that is, a determination that safeguards of the International Atomic Energy Agency being applied to foreign reprocessing of U.S.-origin spent fuel could provide timely warning between the time of a diversion of separated plutonium and the actual fabrication of a nuclear weapon with the plutonium.

Last year, the Administration approved a continuation of the operations of Tokai Mura for a four-year period during which some 210 tons of spent fuel could be put through that plant annually. In making this approval, the Administration purported to make a "timely warning" determination, but it treated timely warning not as a technical question, but as a political issue. This is a fundamental misinterpretation and misapplication of the Act, as can be seen in the legislative history from the House report on the Act.

I would like to put into the record the pertinent portions of the House report. It was the House provision that eventually was enacted. It was not altered substantially by the Senate, and it was noted when the House passed the Senate version of the bill that the timely warning standard as originally passed by the House remained intact. The House report states that "the Committee (on Foreign Affairs) expects (the Executive Branch) to assure that warning times would exist that are at least roughly equivalent to those that can be obtained when spent low enriched reactor fuel is placed under verified storage in countries not possessing a reprocessing capability."

The House report further stated that the Administrator was to assume "that the party in question could already have done work in nuclear weapons research, design and fabrication, so that the sole remaining need would be that of the weapons-usable material itself."

With your permission, Mr. Chairman, I would like to insert portions of the report dealing with timely warning into the record.

In making previous determinations that the Japanese could go forward with very limited work at Tokai Mura—limited both in terms of duration of time and quantities of material—the Carter Administration never made a technical finding that safeguards providing timely warning could be applied. Instead, the previous Administration made a strictly political determination—based on an assessment of Japan as a close ally with no nuclear weapons program—that limited reprocessing "will not result in a significant increase of the risk of proliferation." Although it presumably gave foremost consideration to the technical "timely warning" question, the Carter Administration relied solely on its political assessment of Japan.

The Reagan Administration, however, improperly took a technical statutory requirement and treated it politically in making a "timely warning" safeguards

determination. Furthermore, it has approved not a limited reprocessing program but a full-scale one, at Tokai Mura. This was testified to by Harry Marshall at the House hearing on the subject last October.

In response to a question from Representative Bingham, "Do you feel that the timely warning standard will be met in the Tokai Mura plant?", Mr. Marshall replied: "Yes, we feel that the requirement of Section 131 is satisfied under the terms of this subsequent arrangement. We did give, as required by the statute, foremost consideration to that factor. But we also took into consideration the situation with Japan and the risk of an increase in proliferation."

Then the following exchange took place:

> Mr. BINGHAM. I understand that. But I am asking you really a narrower question at this point. The question is, assuming there were a diversion that was not detected, how much time would there be before action was taken to prevent the misuse of that plutonium? That is what the timely warning standard is all about.
>
> Mr. MARSHALL. In the case where such misuse were not detected, we couldn't do much until we realized that something had happened. But we feel that, given the circumstances, the size of the reprocessing plant, the safeguards that the IAEA imposes at the facility, the nature of the material accountancy process there, our diplomatic relationship with Japan, in sum, the whole ball of wax, that if there was a diversion of significant quantity we would know about it in time to do something diplomatically before a device could be fabricated.
>
> Such a thing is hard to imagine in any event in the case of Japan, given their dedicated opposition to explosive uses of nuclear energy. But nevertheless, we feel that if such an extremely unlikely event were to happen, we would be able to do something about it.

If, in fact, the technical safeguards are not adequate to provide timely warning at Tokai Mura, then an improper determination was made by the Administration. In fact, the Japanese acknowledge that the Tokai Mura safeguards do not meet IAEA's safeguards standards in most cases.

I cite a Japanese document reporting on the results of the TASTEX project—that is, the joint U.S. Japanese safeguards development project—where it is reported in the PNC News and Reports of July 1981 (PNC being the Power Reactor and Nuclear Fuel Development Corporation of Japan) that the TASTEX program has been completed and that 13 tasks in terms of safeguards development were to be tested to determine whether IAEA standards could be achieved through the safeguards research and development.

It is instructive to see what was not accomplished in terms of meeting IAEA safeguards standards. I will just cite a few tasks still requiring further development.

One is "surveillance devices in the spent fuel receiving and storage area," a key element to safeguarding a reprocessing plant. Another is "non-destructive analyses of spent fuel assemblies," essential for determining actual plutonium content of spent fuel. Two others are "monitoring in the plutonium product area" and "near real-time accounting system", which lay at the heart of the safeguards, at least from the standpoint of observing and auditing of the materials going in, through, and out of a plant.

So by the Japanese' own acknowledgement, the safeguards in that plant are still incapable of achieving the types of results that would permit a timely warning determination to be made. I bring this point to the Committee's attention in the hope that it will recognize the extent to which the Administration has misapplied the Act. The Committee also should explore the implications for legitimizing clearly dangerous reprocessing activities that other nations as well as Japan are going to want to pursue on the basis of the TESTEX program.

I will conclude, Mr. Chairman, by stating that the only effective nonproliferation policy is one that seeks to ban atom bomb materials—plutonium and highly enriched uranium—from commerce. Any policy that seeks to legitimize commercial and other civilian use of these materials, and then concentrates on which nations shall have and which nations shall not have access to these materials, is inherently discriminatory and is doomed to fail. Unfortunately, a world in which there is commercial trafficking in many tons of bomb-grade plutonium and uranium may be doomed as well.

Finally, I submit for the record another letter that was sent by members of the Working Group to members of this Committee and to House members who have

an interest in the proliferation problem. It is what we termed at the time a "basic principles" letter. It established a set of basic principles that should guide U.S. nonproliferation policy. I ask that this letter be made a part of the record as well.

The principles are summarized as follows:

1. Commercial use of plutonium must be banned.
2. Commercial development of dangerous new technologies must not be permitted.
3. Commercially generated plutonium must not be used in military nuclear programs.
4. Access to spent fuel must be controlled.
5. Trade in weapons-usable material must be curtailed.
6. Economic sanctions must be made available against countries violating non-proliferation principles.
7. Nuclear trade must not continue without effective safeguards.
8. All nuclear transfer and retransfer authority must be consolidated in the Nuclear Regulatory Commission.
9. The United States must work with other nuclear suppliers to strengthen guidelines against proliferation.
10. Linkage between the global spread of nuclear weapons and the superpowers arms race should be clearly established.

Senator PRESSLER. Thank you very much.

We will now ask our questions. I have some questions and then we will call on Senator Glenn, and then I have some additional ones to submit for the record from Senator Percy.

First of all, Commissioner, do you believe that the United States should prohibit sales of all dual use technologies to nations which refuse to accept full scope safeguards? If not, do you believe that there are some dual use equipment, materials, or technologies that should not be exported to such states? How should such decisions be made? If yes, which major items should be prohibited from export?

Mr. PALLADINO. Senator Pressler, first I should indicate that I do not believe the Commission as a body has developed a policy on this matter of dual use. It is a rather complicated subject and one on which it is difficult to give a very simple answer.

I would say that the way we have been working up until now is we have had representation on the Subgroup on Nuclear Export Coordination on these matters, and they have been trying to keep us informed on what has been taking place and reflecting some of the feelings of the Commission.

Now, speaking personally—and I guess that is the only way I can speak on this matter—I think there are some dual equipment items that should be carefully monitored and restricted in their use by countries that do not have good nonproliferation credentials. And on the other hand, I think there are some items or equipment that could be released without such controls.

Now, to get into specifics, I am not quite prepared at this moment to do so.

Senator PRESSLER. Let me then ask if you have any reservations with regard to any particular transfers of material, equipment, or technology that has already been concluded or been proposed by this administration?

Mr. PALLADINO. I think we did have some concerns with regard to some of the equipment exported to Argentina. I guess perhaps that was not exactly dual-use equipment, but it was pretty close to it. It could be considered dual-use equipment. We did comment on that particular item. In our response, the Commission noted that approval of this case

could be viewed as a reversal of the executive branch's policy on restricting exports to sensitive nuclear facilities, and also could be viewed as sanctioning such transactions without full scope safeguards in the future. We went on to indicate our belief that this deserved careful evaluation on a U.S. policy basis.

Senator PRESSLER. Following that up, according to press reports, the Department of Commerce advocates the sale of a hot isostatic press to South Africa. I believe that such a press could be used in making nuclear materials into explosives. Do you see any risk in exporting this item to South Africa?

Mr. PALLADINO. Let me first give you a statement of fact, then I will give my opinion. As I understand it, the subgroup has not approved the export of that equipment, and I gather that the Commerce Department is coming back asking for reconsideration. I do not think that reconsideration has yet taken place.

In my own opinion, I would have concerns on the shipment of that equipment.

Senator PRESSLER. I might ask the public witnesses this question. Some claim that the nonproliferation policy of this administration represents an evolution rather than a departure from the policies of the Carter administration. Would each of you comment on this?

Mr. NYE. I suppose I should volunteer since I was cited earlier on this. I believe the metaphor I used about the train on the tracks is the best way of expressing it, that the administration is still pointed in the same direction, but the lack of steam in the engine and frequent derailments are sources for concern.

Let me give you a couple of examples just from what we have heard this morning. On the hot isostatic press, a case like that came up when I was in the Government and we clearly turned it down. The Department of Commerce at that time was also being pressed by a manufacturer to approve it, and it was refused on national security grounds. I am interested that the case is still pending in this administration.

The Argentine case is another one. I do not think that export would have been approved. It certainly should not have been approved. So there are differences in terms of how strictly one applies the nuclear export criteria, particularly in grey areas.

A second example is the plutonium use policy, which has become somewhat controversial. It is true that the Carter administration was moving in the direction of some generic approvals for subsequent transfers for reprocessing. This was one of the compromises that was occurring at the end of the International Nuclear Fuel Cycle Evaluation. I do not believe, however, that the Carter administration would have coupled it with providing or offering to provide nuclear technology and reprocessing, nor do I believe the Carter administration would have allowed it to go forward without getting something in return, in other words getting improvement on, for example, full scope safeguards or the application of safeguards in export policy or, for example, progress on spent fuel storage.

When I used to come and testify on this issue of subsequent retransfers, in particular cases, I believe in 1978 regarding Japan—and at that time I believe we were still on a case-by-case basis—I pointed out

that we were indicating to the Japanese that our willingness to go ahead with permission was related to the cooperation the Japanese were providing in an area such as international spent fuel storage.

I do not see any evidence that this administration, while it is moving in the direction that the Carter administration was moving on generic retransfers, has applied those other conditions. So I think, yes, it has evolved and it has evolved in the wrong direction.

Mr. MUNTZING. Mr. Chairman, I would just like to comment that sometimes the differences between the two administrations are emphasized more than their similarities. In fact, the objectives are the same, and that is to prevent the spread of nuclear weapons. The means do differ, but not to a great degree.

It seems to me that this Nation has developed a great concern for nonproliferation problems. It has communicated this to the world. It has enacted laws and it now has evolved to a situation where it is necessary to say, we cannot do it alone, we need allies, we need allies throughout the world to help us with nonproliferation risks.

We need allies from such countries as the EURATOM countries and Japan, who have technology and who can transfer it, to deal with the real risks, and the real risks are those kinds of countries that we have talked about here today. I think what we have come to realize is that international cooperation with our allies is most important.

For instance, with regard to the dual use problem that we have been discussing here this morning, it is fine for the U.S. Government to worry about this and to review each case on a case-by-case basis. But the really appropriate answer to dual use is to consult with our principal allies who are in the position of having to face this same problem. If they transfer the technology, what good does it do if we deny ourselves?

We should move to international cooperation with other countries who are in a similar situation as we are, who have technology and equipment that can be transferred and develop a common approach to the dual use problem.

Through the years we have done quite well. The Zangger list is an example, where the international community came together and made decisions with regard to key sensitive nuclear items and put them on what is called the Zangger list. In the dual use area we can do the same. We should go international. We should secure the assistance of our allies, so that we have their cooperation and can build with them to control the real proliferation risks.

Mr. LEVENTHAL. I might just comment briefly on the dual use question. It is all well and good to say that we have to work with our allies to try to develop some consensus on this, but the question is, what are we prepared to do to arrive at that consensus? I mean, are we turned off the moment they say, "Thanks but no thanks?" Or are we prepared to apply legitimate leverage not strictly in the nuclear commercial field but in all areas of common interest that we have with each of them?

It would appear that the principal argument for sending out the dual use exports is, "If we do not, someone else will." If we are simply to acquiesce in that mindset, then these dangerous items are going to go out one way or another and nuclear weapons will spread.

I also will add just a little bit of historical perspective to this problem. One of the more sensitive dual use items recently exported was a Foxboro industrial-process computer, which was transferred to Switzerland for retransfer to Argentina for use in a heavy water plant. We are bound by the terms of the Non-Proliferation Act not to transfer directly to Argentina because they do not accept full scope safeguards, so we find an alternative supplier.

What is interesting is that one of the more troublesome and worrisome facilities in existence today, the unsafeguarded enrichment plant in South Africa, is also the beneficiary of a Foxboro industrial process computer—actually two of them—that were exported in the 1971 to 1973 period. At that time, it was known that they were going to be used in the South African nuclear research program. There was no question that it was to be the particular enrichment plant in question.

A number of agencies participated in a preliminary review and then let the export go forward. It should be noted that if it had gone out as a designated nuclear export, we would have beeen in violation of the Nuclear Non-Proliferation Treaty because we are not permitted to export anything for use in a nuclear facility that is not safeguarded.

So, the problem has a long history, and it does not seem that we are anywhere near coming to grips with how to deal with it.

Senator PRESSLER. I have some additional questions, but I will yield to my colleague, Senator Glenn, at this time.

Senator GLENN. Mr. Chairman, I know that we are going to have additional questions, and I would ask that the witnesses respond to any additional questions we might wish to submit later on.

I have been curious about how the administration's new program might work. Pursuant to Mr. Muntzing's comments a moment ago, I would start off with some comments. The document that was signed by the President on programmatic approvals for plutonium use, contains the following statement:

"These approvals are premised on the expectation of," I repeat, "expectation of improved cooperation on non-proliferation, participation in pressing proliferation problems in sensitive regions, and the implementation of more effective controls on civil plutonium."

It seems to me that is very vital and fundamental. We are either getting that kind of cooperation from other countries or the policy falls into immediate disrepute. It is not much of a policy unless we are getting that kind of cooperation. I would question whether we are getting that or whether we are pushing for that kind of cooperation. I perhaps should be addressing this to Mr. Devine.

We formed the Nuclear Non-Proliferation Act back in 1978, after much, much debate, as Mr. Nye remembers. We considered whether the best way to go would be to continue with business as usual, but to involve American business and to gain influence around the world through business.

After much debate, we decided here that it was best, in this interim period, at least, to go with government-to-government controls approach, to prevent the spread of reprocessing equipment, which is used to get plutonium, of course, and enriching equipment. Now, it would appear to those of us who have followed this thing very closely that we

are going in the opposite direction right now. We are technically still operating under the law that says government-to-government, but, really, what we are doing is saying, get out there and get those contracts, and boy, we will approve them, since it does not make much difference. We are not holding back on the Germans, the Swiss, or anybody else who we have any influence with. It is back to business as usual, which is what we thought we were trying to prevent.

I do not know if that is the direction that we are going. I pray for all of us that it works, but it just does not appear to me that that is the way we should be going right now.

You mentioned the Zangger list. I would hope that we would expand that and be more restrictive in some of these areas during this interim period.

It was mentioned earlier that nuclear powerplants do not really play much of a role in nuclear proliferation. I have supported nuclear power around the world. But I would submit that reactors can have a major role in efforts to achieve a nuclear weapons capability. An example is Pakistan. I think they may well get the material for a bomb by diversions from the KANUPP reactor. That is what it looks like to us, at any rate, at this end of the avenue.

So I do not quite see as rosy a picture with regard to some of these plants. I think we do have to consider in some instances, such as Pakistan, whether we are right in sending it in even to peaceful plants where there could be diversions like this.

That leads to the question of how we even keep track of anything around the world if we are considering backing out of IAEA on a permanent basis. Apparently, as Mr. Devine said, that is one of the options. He said he did not exclude withdrawal. Now, I do not know whether that is being copied widely by the press people. The administration may hope that it gets over to the IAEA and brings them to their senses. That may be the purpose of the statement.

But if we are seriously considering that, then I would certainly ask Mr. Devine, what are we going to replace IAEA with? It is the only way to keep up with what goes on around the world, since we do not have Americans involved at every point around the world.

I think it was wrong to exclude Israel. I do not disagree with our decision to support Israel in that decision. But, if you are concerned about uncertainty in the world, you are sure rattling some cages around the world by a threat to get out of IAEA and dump it. Without the U.S. participation, IAEA will be nothing. A good way to generate uncertainty in nuclear matters around the world is to get out of IAEA.

Maybe you would wish to respond to some of that. That is more of a statement than a question.

Mr. DEVINE. Yes, I would like to comment on a couple of things. First of all, for the record, on the matter of hot isostatic presses, the administration did review the matter at the request of the Department of Commerce and reconfirmed the previous policy, namely that large HIP's, as they are called, will not be exported to countries of proliferation concern. So the policy is indeed the same as the previous administration's.

Second, with respect to what are we getting for the plutonium use policy, I cannot, of course, go into the negotiations that are ongoing,

but I can assure one and all here that we are not just giving U.S. consent rights away. The President's statement from which you read is being implemented. What we get for it will be fully laid out for the Congress at the time the new arrangement is submitted to it for consideration.

Third, with respect to KANUPP, we are just as concerned as you are, Senator, about the safeguards situation there. The IAEA has not been able to certify that it could detect a diversion. We are working hard on that one.

With respect to providing Pakistan nuclear technology for peaceful purposes, our position is that Pakistan, given the current shape of its program, should not benefit from any Western technology, and we have so informed other suppliers; that with respect to the power reactor that Pakistan is seeking, we believe that any such transactions should be accompanied by the acceptance of full scope safeguards on the part of Pakistan.

Senator GLENN. But we know what Pakistan is doing. They are driving for bombs as hard as they can. We have known that for a long time. That comes from many sources. Yet we refuse to even cut off aid. We just went right ahead as though nothing had happened there, in violation, as I see it, of the Foreign Assistance Act.

I did not agree with the previous administration, either. Joe, remember our big fuss the first time we really came up with a hard confrontation with regard to whether we were going to support the Nuclear Non-Proliferation Act or not with the fuel shipments to India?

I do not think at any time in the Carter administration did they put on a more full-court press than they did to get that fuel shipment to India. I fought that on the other side and lost it on the Senate floor 48 to 46. I still think that was the first time it was a real test and we blinked. We were the ones who gave in.

It has been sort of downhill ever since. I think Pakistan fits into the same category. That was the second big test and we backed down. I think had we stuck with our policy we might have had a lot more support around the world than we have had. I do not know where we go now on Pakistan.

It does not make any difference if they get ready to explode a bomb or if they explode the bomb. We will go ahead and give them economic and military support anyway, apparently. So it does not make that much difference. It just makes other nations look at our policy as though it really does not mean much.

Now we are shifting and we are going to have a change in plutonium policy. We are going to have all of these approvals in advance, virtually in perpetuity, with certain countries, which raises the question of how other nations who do not get such favored treatment look at the U.S. Government.

It just seems to me that we are creating more uncertainty than certainty by our changing policy.

Mr. DEVINE. May I comment?

Senator GLENN. Sure.

Mr. DEVINE. I am not clear on your reference to "blinked the second time" with respect to Pakistan. Under the NNPA, we are forbidden

to export any nuclear materials to Pakistan, and neither the previous administration nor this one has approved any exports to Pakistan.

Senator GLENN. That is in the Foreign Assistance Act. The Glenn and Symington amendments to the Foreign Assistance Act require that kind of cutoff of assistance.

Mr. DEVINE. I see. Well, let me say, if Pakistan violates the safeguards agreements or detonates an explosive device, as the President indicated in his statement last July, this would be a matter of grave concern and all elements of the relationship would have to be very closely reexamined.

Senator GLENN. Under the new policy that we have now, I understand that State has issued some 250 demarches in the past 1½ years regarding exports by both foreign and U.S. firms of material with nuclear end uses that might be significant for weapons development. Is it correct that that is the number, approximately, in the last year and a half?

Mr. DEVINE. I think that is a fair estimate, yes, sir.

Senator GLENN. Is that a large number? Is that a big increase?

Mr. DEVINE. Based on my experience, it is. I think it reflects our growing awareness of particularly the Pakistan program and a greater recognition of the ability of a nation to put together widgets, if you will, that individually might be non-sensitive, but taken together present a proliferation risk.

I might add that these demarches did not take the form of threats or anything. These were more in the form of alerts to other governments that such transactions were in progress.

Senator GLENN. What does this say about the rise of nuclear trade? To what do you attribute this rise?

Mr. DEVINE. Well, the vast majority of these transactions did not involve nuclear equipment or material per se, but rather components that, when put together, could present a proliferation risk. These transactions, as I have said, are not necessarily specially designed for nuclear facilities.

Senator GLENN. Mr. Palladino, do you think your organization should be taken out of the loop on approval of these transfers abroad?

Mr. PALLADINO. On retransfers?

Senator GLENN. Yes.

Mr. PALLADINO. At the present time we consult on retransfers, but we do not have a direct say-so on retransfers. I think keeping us in the loop would be valuable.

Senator GLENN. But it does have your approval on exports, then, does it not?

Mr. PALLADINO. On exports, we have direct approval. On retransfers, we consult. That is how I understand the act.

Senator GLENN. On the original export of these things, is the proposal now that you be taken out of that?

Mr. PALLADINO. What is that?

Senator GLENN. Is there a proposal now by the administration that you be taken out of that circuit on approval for original export?

Mr. PALLADINO. I have heard words to that effect, but I have not personally been involved in any such proposal.

Senator GLENN. Do you favor remaining in that loop and still having that approval authority for the NRC?

Mr. PALLADINO. I can speak only as an individual on that.

Senator GLENN. Well, who can speak for the NRC on that?

Mr. PALLADINO. It depends on what point in time you want to speak for the NRC. There was a time when the NRC——

Senator GLENN. I will settle for a point in time right now.

Mr. PALLADINO. Well, at this point in time I do not think the NRC has addressed that issue.

Mr. DEVINE. May I clarify one thing, Senator? There is no current proposal to take the NRC out of the export process, and indeed there really never was. There was a discussion paper generated last summer, a year ago this past summer, but it was only a discussion paper. There never was a decision and there never was a proposal to do so.

Indeed, we have come to quite the opposite conclusion, that the NNPA should not be amended.

Mr. LEVENTHAL. Excuse me, Senator Glenn. I would like to add to that if I may. It should be noted that pending legislation in the House, a bill that combines the Bingham and the Ottinger legislation on nonproliferation, has a provision that actually would strengthen NRC's role in the interagency review process by requiring it to make a proliferation risk determination, along with the Department of State and Energy.

So that might be worthy of your consideration.

Senator GLENN. Mr. Nye, do you have any comment on this increase in the demarches in the past 1½ years? There were some 250 in the past 1½ years. Is that a big increase from your past experience over there?

Mr. NYE. I would have to know the level of the demarches, that is, how important the issue was, to be able to know what those numbers mean, Senator. It is sort of hard to tell. We were certainly in constant communication with other governments often, many times about the same issue. So it is hard to know what a number like that means without really seeing more texture.

Senator GLENN. Do we have a vote on now?

Senator PRESSLER. Yes, we do, and I will not be able to return afterward. So if you want to return afterward, we can.

Senator GLENN. Perhaps what we ought to do is submit our questions to the witnesses for the record.

Senator PRESSLER. I do not want to cut off your line of questioning, Senator Glenn. But first of all, I would like to get something correct in the record.

Mr. Devine, is Mr. Leventhal correct in stating that the Foxboro computer has been transferred to Argentina since the Falkland Island crisis?

Mr. DEVINE. No, sir, that is incorrect. That was approved in July of 1981.

Senator GLENN. Where is it now?

Mr. DEVINE. I am not certain, sir. I will provide that for the record.

Senator GLENN. Is it still in Switzerland?

Mr. DEVINE. I am not certain.

[The material referred to follows:]

According to Foxboro, the process control equipment for the heavy water plant is now in the Netherlands pending shipment to Argentina.

Senator GLENN. Would we have to approve a further transfer beyond Switzerland?

Mr. DEVINE. I do not believe so, no. The original approval was for both destinations.

Senator GLENN. If it is still in Switzerland, could that transfer not be rescinded still?

Mr. DEVINE. I would have to look into that. I do not believe from a legal point of view whether, once having given our consent, we can withdraw it.

Senator GLENN. Well, time is short today. I wish we had a lot more time. I am sorry I was not here during your testimony, Mr. Devine, but I had another committee meeting over on the House side and I had to give testimony over there.

These are very vital matters and we have many questions which we cannot complete before we go to vote. I just hope we are all on the right track on this, because it really worries me very much. Although the administration's nonproliferation activities may still fit under NNPA, the attitude just does not fit under NNPA.

We hoped to take a very restrictive lead in the world and hoped that we could get other nations to follow us, particularly nuclear supplier nations, during this interim period while we tried to do SALT and all these other things to get arms control. But we are backing off that now. We just tend to be going in the other direction, it seems to me.

In the last 2 years, for instance, we could not even get the President to bring this up at the Ottawa summit, nor the Versailles summit, where there were other nuclear supplier nations present. Even though we passed resolutions in the Senate unanimously both years asking him to do that, there was just nothing. So I do not know.

I guess we question whether the administration is merely saying that we are still under NNPA and are not going to propose changes, while the spirit of NNPA is down the tube, we are not really moving in the right direction, it seems to me. I hope we are right with our new policy and I hope it gives us a better handle on things, because it is going to be tragic if we see this nuclear weapons capability spread to more and more nations, which I am afraid is what we are going to witness.

Mr. DEVINE. I can assure you, Senator, that we are as dedicated to nonproliferation as you are.

Senator GLENN. But you sure are approaching it from some very different directions.

Thank you, Mr. Chairman.

Senator PRESSLER. I want to thank our witnesses, also, and also want to say that we had several more questions here. I also see my former classmate Carl Stoiber, who was at the desk earlier. I would like to have asked him some questions. But we will be submitting them for the record, and we will be keeping in touch.

We thank you all very much. This committee stands adjourned.

[Additional questions and answers follow:]

STATE DEPARTMENT'S RESPONSES TO ADDITIONAL QUESTIONS SUBMITTED FOR THE RECORD

Question 1. Under Secretary of State Richard T. Kennedy has recently been nominated to be Ambassador at Large for nuclear nonproliferation matters. What will Mr. Kennedy's role and responsibilities be? Is this intended to reconstitute the post held by Gerald Smith during the Carter administration? Will Mr. Kennedy have any authority over the export decisions at the Department of Energy?

Answer. Mr. Kennedy's responsibilities as Ambassador at Large will be severalfold. As the White House announcement of his appointment indicated, "Mr. Kennedy will serve as Special Adviser to the Secretary of State on Non-Proliferation Policy and Nuclear Energy Affairs and will coordinate and direct U.S. non-proliferation efforts." He will serve as the United States Representative to foreign governments in matters dealing with nonproliferation and peaceful nuclear cooperation. In that capacity, he will carry out the functions performed by Ambassador Smith during the previous administration. He will also continue to serve as the U.S. Representative to the International Atomic Energy Agency (IAEA) as well as the U.S. Member on the IAEA's Board of Governors. Finally, he will be responsible for the development and execution of U.S. nonproliferation and peaceful nuclear cooperation policies. Day-to-day implementation of those policies will remain with the Bureau of Oceans and International Environmental and Scientific Affairs.

As for the Department of Energy (DOE) export actions, DOE has responsibilities for authorizing the export of certain kinds of nuclear technology to certain foreign destinations as well as approving subsequent arrangements, e.g., requests for reprocessing of nuclear material subject to U.S. consent rights. The concurrence of the Department of State is required for such actions, and Mr. Kennedy will provide general policy guidance for the Department of State in such cases.

Question 2. The Administration has listed 63 countries that will be subject to strict export controls.

(a) Would you provide the committee with that list?

(b) Would you explain the criteria used to decide the composition of this list?

(c) Would you describe the range of materials, equipment and technology that will be denied to these countries?

Answer. (a) Attached, as requested, is the list of 44 countries which would be added to the existing list of 19 countries (for a total of 63) for which specific authorization is required for U.S. persons to engage in unclassified activities in foreign atomic energy programs under the 10 CFR 810 regulations administered by the Department of Energy.

(b) Under present Department of Energy regulations under 10 CFR 810, the general authorization for U.S. persons to provide assistance to reactor programs does not apply to Communist countries.

The 44 countries proposed for inclusion in that list are non-nuclear weapon states which are not parties to the Treaty on the Non-Proliferation of Nuclear Weapons (except for those which accept full-scope safeguards or the equivalent or for which the Treaty of Tlatelolco is currently in force) and other countries that present a proliferation concern or are located in regions of instability. Inclusion of a country on the restricted list does not mean that all proposed nuclear technology transfers to that country would necessarily be denied, only that each request for that country would be considered on a case-by-case basis.

(c) The 10 CFR regulations cover transfers of nuclear technology which may include proposed exports of nuclear equipment incorporating advanced technology. Nuclear materials are normally not involved in such transfers. The range of activities which would be controlled under the proposed revisions to 10 CFR would not change: These now include: (1) Direct or indirect assitance in the design, construction, fabrication or operation outside of the United States of: (i) a nuclear reactor; (ii) a facility for the separation of isotopes of any source (natural uranium or thorium) or special nuclear material (uranium enriched in the U–235 or U–233 isotopes or plutonium); (iii) a facility for chemical, physical or metallurgical processing or fabrication or alloying of special nuclear material; (iv) a facility for the production of heavy water; (v) uranium mining and milling; (2) Training foreign persons in the design, construction, fabrication, or

operation or maintenance of such facilities or equipment or components especially designed, modified or adapted for use in such facilities; or (3) Furnishing information not available to the public in published form for use in the design, construction, fabrication or operation or maintenance of such facilities or equipment or components especially designed, modified, or adapted for use in such facilities.

COUNTRIES THAT WOULD BE ADDED TO THE LIST IN 10 CFR § 810.7(a)(1)[1]

Algeria	Guyana	Saint Vincent and the Grenadines
Andorra	India	Sao Tome and Principe
Angola	Iran	Saudia Arabia
Antigua and Barbuda	Iraq	Seychelles
Argentina	Israel	Solomon Islands
Bahrain	Kiribati	South Africa
Belize	Kuwait	Syria
Bhutan	Libya	Tanzania
Brazil	Malawi	Uganda
Burma	Mauritania	United Arab Emirates
Chile	Mozambique	Vanuatu
Comoros	Niger	Yemen Arab Republic
Djibouti	Oman	Zambia
Dominica	Pakistan	Zimbabwe
Equatorial Guinea	Qatar	

[1] The currently-pending revision of Part 810 would revise the list in section 810.7(a)(1) to read: Afghanistan; Albania; Bulgaria; Cuba; Czechoslovakia; Democratic People's Republic of Korea; Estonia; German Democratic Republic (and Berlin, eastern Sector); Hungary; Kampuchea; Laos; Latvia; Lithuania; Mongolian Peoples Republic; People's Republic of China; Poland; Romania; Soviet Union and Vietnam.

NUCLEAR REGULATORY COMMISSION'S RESPONSES TO ADDITIONAL QUESTIONS SUBMITTED FOR THE RECORD

Question 1. Would you assess the benefits and the drawbacks of this administration's approach to plutonium use and to the transfer of dual-use technologies?

Answer. The Commission, in conformance with its statutory role, has made it a practice not to comment on the merits of administration nonproliferation policy. Our comments, instead, focus on whether the Executive Branch's individual export-related actions conform with established U.S. nonproliferation policy and statutory requirements. This practice recognizes that the Congress and the Executive Branch have the primary responsibility regarding the formulation of new statutory and policy initiatives in the nuclear export area.

Commissioner Gilinsky comments: This administration's commitment to the commercial use of plutonium domestically stimulates appetites around the world for this dangerous material at a time when no international mechanism exists for adequately protecting it from military use.

The administration's more accommodating approach toward reprocessing of U.S.-supplied fuel and subsequent use of the contained plutonium is, for the moment, restricted to Europe and Japan. However, this policy is bound to cause complaints from other countries about unequal treatment. These will be all the more difficult to respond to in view of the administration's statement on the importance of reprocessing and plutonium use in our own nuclear power program. Our long experience shows that, in response to pressures from abroad, exceptions will likely be made to permit ever broader access to plutonium.

Question 2. Are you satisfied with the relationship between the Executive Branch and NRC with regard to role and responsibilities regarding nuclear exports.

Answers. In general, the Commission is satisfied with this relationship. As I indicated in my prepared statement, interagency review and coordination procedures are working to enable serious proliferation concerns to be considered before export determinations are made.

Question 3. Is the administration cooperating fully with the NRC in providing requested information upon which licensing decisions are based?

Answer. NRC has a good working relationship with the Executive Branch, including the intelligence community, and believes it is being kept informed on a

timely basis. Furthermore, in addition to export-related information received by NRC on a routine basis, the Commissioners periodically request and receive Executive Branch briefings on nonproliferation matters of concern.

MR. MUNTZING'S RESPONSES TO ADDITIONAL QUESTIONS SUBMITTED BY SENATOR PERCY

Question 1. Do you believe that the plutonium-use policy which creates two classes of states, those that are worthy of trusting with plutonium and those that are not, could contribute to weapons spread amongst those states which believe they are being discriminated against?

Answer. Few foreign policies which discriminate among nations are completely without risk. Although the discriminatory aspects of the Reagan Administration's non-proliferation policies are not risk-free, the essential inquiry is whether the discrimination is reasonably tailored to further the Administration's overall non-proliferation policy. In my view the Administration's policy draws necessary distinctions between nations, such as Euratom and Japan, which have undertaken advanced nuclear power programs based on established power needs, and other countries whose programs are more modest. Also, the political stability of regions and particular countries is of paramount importance, as the Administration's policy recognizes.

At present only a few stable countries firmly committed to effective non-proliferation policies and having advanced nuclear programs are pursuing plutonium reprocessing for their established power needs. Restricting access to U.S.-origin plutonium to this small group of countries may be discriminatory but it is a distinction based on a sound principle. It also furthers the objective of international cooperation with nations having good non-proliferation credentials so that with their support the most serious proliferation risks can be handled together.

Question 2. How successful were the Carter policies in slowing proliferation?

Answer. Former President Carter's non-proliferation policies were counter-productive. His decisions to "defer indefinitely" commercial reprocessing of plutonium and to "restructure" and "defer" the breeder reactor program severely damaged U.S. credibility and influence as an international supplier of nuclear commodities. His policies of denial were also contrary to the well established method of approaching non-proliferation problems through the International Atomic Energy Agency (IAEA).

Unilateral abandonment of commercial nuclear power activities does not prevent nuclear weapons proliferation. Proliferation is a political, not technical, problem. There is no quick, technical fix for the problem of weapons proliferation.

The relationship between nuclear power plants and weapons proliferation has been overdrawn. The International Nuclear Fuel Cycle Evaluation (INFCE), initiated by Carter, concluded that "the use of commercial grade plutonium is an unattractive route to the manufacture of nuclear weapons as compared with weapons grade plutonium produced by a dedicated program." No country has ever used a commercial nuclear power plant to produce plutonium for nuclear weapons.

The unilateral actions of the past Administration served only to remove the United States from the international nuclear energy arena, where the United States is most influential. In United States diplomacy, there are two powerful instruments of policy formation and policy execution: technical expertise and management skill. The role of nuclear power in meeting the world's energy demands will increase with or without United States participation. If the United States does participate, it can wield a formidably persuasive carrot and stick, because of its vast technical and physical resources. If it becomes voluntarily isolated, it will have little control over the rate and degree of nuclear weapons proliferation.

Question 3. Do you believe the Reagan Administration's policies will curb proliferation?

Answer. It is still very early to determine whether President Reagan's policies will curb nuclear weapons proliferation, but they appear to be on the right track. First and foremost, Reagan expressed his desire to reestablish the United States as a reliable supplier of nuclear commodities and a cooperative partner in the joint development of nuclear energy. Within seven months of taking office, Reagan lifted the Carter ban on commercial breeder development and plutonium reproc-

essing. Concurrently, "physical need" as a condition for U.S. approval of MB–10 reprocessing applications was eliminated from interagency consideration. Earlier this year, the Administration made an offer to permit transfer of enrichment technology to Australia. Most recently, the President has announced a new plutonium use policy premised upon programmatic approvals aimed squarely at Japan and Euratom.

Reagan has stated that the best hope of restricting further proliferation lies in "our ability to improve regional and global stability and reduce those motivations that can drive nations toward nuclear explosives." The pressing need is for more, not less, cooperation. It is particularly important that supplier nations do not isolate from nuclear commerce nations that have advanced fuel cycle programs since this might force them to accelerate their own programs while it diminishes whatever restraining influence the supplier nations may wield.

The current Administration's prescription for handling the potential spread of nuclear weapons has been to treat proliferation primarily as a security problem. The U.S. under Reagan has avoided "unnecessary efforts aimed at countries posing no risks; simultaneously, it has strengthened non-proliferation measures against "nations where the potential for acquisition of nuclear explosives is a risk to U.S. security interests." No criteria for relegation to one category or the other have been clearly enunciated; Reagan's non-proliferation policy statement has been interpreted and amplified gradually by State Department pronouncements. The policy seems to be working; his belief in international cooperation and support of the IAEA and NPT are laudable.

Question 4. Would the creation of regional enrichment and reprocessing facilities be a workable method of providing for both legitimate nuclear needs and safeguards against weapons spread?

Answer. Creation of regional fuel facilities should be pursued for two main reasons: such facilities would be inherently easier to safeguard; and participation in such joint ventures fosters international cooperation and enhances the non-proliferation regime.

According to INFCE, the worldwide demand for energy will grow; so, too, will the use of nuclear power as a "viable electricity supply option." INFCE recommends that governments, "in close cooperation with the nuclear industry, take the initiative in establishing regional, international, or multinational institutional solutions for sensitive fuel cycle services that would provide supply assurance to all nations at reasonable cost for such services." The United States is cooperating with Japan on a feasibility study regarding the interim storage of spent fuel elements on a Pacific Basin island. Another effort is being made under IAEA auspices to establish an International Plutonium Storage System (IPS). Multinational fuel cycle efforts beyond the IPS should also be considered, such as reprocessing facilities under international auspices.

INFCE found that "means exist to minimize the danger of misuse of fuel cycle facilities—including technical measures, improved safeguards, and institutional arrangements." Regional, international, or multinational fuel facilities are easier to safeguard than sovereign facilities. Indeed, they may even reduce the risk of proliferation because use of nuclear power reduces nations' dependence upon imported oil.

Perhaps the most important INFCE conclusion is that institutional arrangements and assurance of supply are most important in reducing the nuclear weapons proliferation. By their very nature, they foster international cooperation which further strengthens the non-proliferation regime.

Addressing fuel cycle issues on a multinational basis is an idea which has received few tests. It may be unrealistic to expect immediate, bold steps toward establishment of reprocessing, enrichment, and other facilities under multilateral auspices. Accommodation of sovereign interests and overcoming organization and other problems will prove difficult. Nevertheless, it is important to make the effort. Existing entities such as URENCO show that fuel cycle facilities under international auspices are indeed possible. If such facilities are to succeed, a series of manageable steps is necessary. The United States, in concert with other nations, must initiate feasibility studies. This would be a useful first step.

Continued nuclear commerce and employment of advanced fuel cycle regimes should not be made dependent upon creation of new global fuel cycle facilities. Such entities will only be created through time-consuming steps in a building block approach. It would be unfortunate if unrealistic expectations were har-

bored about the characteristics or capacities of such ventures. Just as the IAEA cannot be an absolute guard against proliferation, international fuel cycle facilities will not offer absolute guarantees for non-proliferation. Improvements in engineering and other sciences will cause a steady progression in the evolution of advanced fuel cycle techniques. It is both unnecessary and short-sighted to expect that institutional mechanisms will remain static. Multinational fuel cycle facilities are a reasonable response to advances in the fuel cycle and, unlike other improvements to the non-proliferation regime, would represent a major new approach.

Title I of the Nuclear Non-Proliferation Act (NNPA) directs the President to undertake negotiations with the objective of establishing multilateral agreements leading toward regional fuel cycle facilities and other multinational endeavors. To date the United States has made only modest use of this authority. Such facilities may, of course, never be constructed, since technical economic, and other problems may prevent a plutonium economy from ever existing. However, it is important that the United States and other countries now seek to negotiate international agreements which would authorize establishment of such regional centers.

Creation of multilateral fuel cycle facilities is one of the most promising ways to approach the fuel cycle needs of less advanced countries. It would be unfortunate indeed if the Congress enacted legislation restricting the U.S. ability to participate in such multilateral ventures or establishing new legal hurdles which will convince other nations that the United States is not a viable participant in these ventures.

Question 5. Do you agree with the contention that the resumption of the American breeder reactor program will adversely affect U.S. influence in discouraging nuclear weapons spread?

Answer. The United States should pursue a sound breeder reactor program and an associated fuel cycle research and development effort so that the technology will be available when the nation needs it. The Clinch River Breeder Reactor should be built as part of this program.

Benefits of breeder reactors are not generally understood. These include the ability to consume usefully the U–238 tailings which in years past have been discarded. Also, in a breeder economy, there will be less need for mining not only of uranium, but of fossil fuels as well. Indeed one of the great contributions of the breeder can come from the fact that it will reduce the need for coal, thereby lessening the toll exacted by mine accidents, and the pollution resulting from combustion.

An objection to the breeder is that its use of plutonium constitutes a potential avenue for weapons proliferation. The public is not well informed on this matter. A widely-held point of view is that plutonium is plutonium and that any group who possesses it can make a bomb, be they terrorists or a sovereign state. It is important to impart the message that the plutonium that comes from a power reactor contains isotopes unsuitable for weapons and can only with difficulty be made into an unreliable weapon.

INFCE concluded that the uranium/plutonium (U/Pu) fuel cycle is optimal from an energy efficiency standpoint, and the diversion risks encountered in the various stages of the fact breeder reactor (FBR) fuel cycle present no greater difficulties than those encountered in the Light-Water Reactor (LWR) with the U/Pu cycle, or even those encountered in the once through cycle, in the long term.

The INFCE conclusions mirror those of the Liquid Metal Fast Breeder Reactor (LMFBR) Review Steering Committee and the National Academy of Science. A plutonium fuel cycle is not symbiotically related to proliferation. It is energy efficient, it reduces dependence on cycle fossil fuels, and it provides additional opportunities for international cooperation and joint ventures.

Mr. Leventhal's Responses to Additional Questions Submitted for the Record

Question 1. Do you believe that the plutonium-use policy which creates two classes of states, those that are worthy of trusting with plutonium and those that are not, could contribute to weapons spread amongst those states which believe they are being discriminated against?

Answer. The Reagan Administration's plutonium-use policy is inherently discriminatory and is destined to fail. It is likely to increase, not diminish, the incentive for nations to acquire separated plutonium and, with it, the ready option to build nuclear weapons. The danger of weapons spread is not limited simply to those non-favored nations outside of the European Community and Japan. It should be remembered that West Germany and Japan, if permitted to reprocess vast quantities of plutonium from nuclear fuel supplied by the United States, will also acquire the wherewithal to have large nuclear arsenals. Given the example of recent history and the uncertainty of future developments, the implications of this potential weapons spread should not be overlooked.

Question 2. How successful were the Carter policies in slowing proliferation?

Answer. The Carter Administration's non-proliferation record was mixed. By declaring a domestic moratorium on reprocessing and plutonium use and by seeking to eliminate the Clinch River Breeder Reactor project, the Administration set an important example for other nuclear industrialized nations. However, the Carter Administration failed to follow through with an effective diplomatic approach to non-proliferation. In the final analysis, it was unprepared to expend the political capital necessary to influence other countries to follow our non-proliferation example; nor was it prepared to extract political costs from those nations that resisted our policy. Despite the rhetoric, non-proliferation never reached the forefront of the Carter Administration's political agenda with other nations. On the other hand, the general thrust of the Carter non-proliferation policy, especially as codified in the Nuclear Non-Proliferation Act of 1978, served to slow the use of plutonium and highly enriched uranium in civilian nuclear programs abroad. In addition, the International Nuclear Fuel Cycle Evaluation, although it did not eventually lead to an international consensus supporting the Carter approach to non-proliferation, did serve to sensitize the world community to the growing danger of nuclear-weapons proliferation.

Question 3. How valuable in terms of non-proliferation is continued U.S. heavy involvement in IAEA activities?

Answer. The current U.S. reassessment of its role in the IAEA can serve to strengthen the global non-proliferation regime if two prerequisites are met:

A. depoliticizing the Agency so that it will be less subject to Third World influence in such disruptive ways as denying credentials to Israel and undermining the safeguards of the Agency.

B. limiting nuclear commerce to those technologies and materials that can be safeguarded effectively.

Third World countries are particularly sensitive to the degree of emphasis placed on safeguards in the Agency in relation to the degree of emphasis on technical assistance; they also are sensitive to any efforts to deny them access to reprocessing and enrichment technology and to use of plutonium and highly enriched uranium. However, for the Agency to be effective in assuring that nuclear equipment and materials are not being misused for weapons purposes, it is essential that the United States use its full influence to upgrade safeguards and to prevent the dissemination of enrichment, reprocessing and the use of highly enriched uranium and plutonium because these technologies cannot be effectively safeguarded.

Question 4. Do you see any danger in selling helium-3, as is now being proposed, to South Africa?

Answer. There is a danger in exporting helium-3 or any nuclear commodity that has a potential application for weapons-making, to South Africa. In fact, South Africa, because it refuses to accept safeguards on all of its nuclear activities (or to ratify the Nuclear Non-Proliferation Treaty) should not be the recipient of any nuclear assistance from the United States. The Nuclear Non-Proliferation Act specifically bars the Nuclear Regulatory Commission from licensing any exports to South Africa, but a loophole in the Act puts the Departments of Energy and Commerce under less severe restrictions. The Reagan Administration has exploited these loopholes to continue to export materials and dual-use components via the Energy and Commerce Departments to South Africa. The Nuclear Non-Proliferation Act should be amended to prevent such exports to South Africa and to any other nation that refuses to accept full-scope safeguards.

Question 5. Given the highly competitive nature of the computer trade, should the United States refuse to export dual-use computers to South Africa, when other producers are likely to provide their equipment instead?

Answer. As noted in number 4, there should be no nuclear or dual-use exports to South Africa or to any other nation that refuses to accept full-scope safeguards. The United States, instead of capitulating to the competitive pressures from other suppliers of these items, should use its substantial influence in the full range of bilateral relations with these suppliers (that is, not limited to nuclear commerce) to inhibit trade in computers and other dual-use items to South Africa until such time as South Africa accepts full-scope safeguards or ratifies the NPT, preferably both.

Question 6. Would the creation of regional enrichment and reprocessing facilities be a workable method of providing for both legitimate nuclear needs and safeguards against weapons spread?

Answer. Regional enrichment and reprocessing facilities would serve to accelerate, not inhibit, the spread of nuclear weapons. There already is a large overcapacity of enrichment services, and reprocessing is not needed because plutonium is not needed for the foreseeable future as a reactor fuel. It is essential to discourage new construction of enrichment and reprocessing plants anywhere in the world either on a national or multi-national basis. Instead, existing enrichment capacity should be used to provide an assured supply of low-enriched fuel in return for commitments from nations not to reprocess plutonium from spent fuel. Spent fuel should be collected and placed in multi-national spent fuel repositories for storage under IAEA safeguards and ultimate disposal in unaltered form (without reprocessing). The Nuclear Non-Proliferation Act already provides for a major U.S. initiative to establish an International Nuclear Fuel Authority to achieve such a desirable outcome. However, this provision of the Act has never been implemented.

Question 7. Do you agree with the contention that the resumption of the American breeder reactor program will adversely affect U.S. influence in discouraging nuclear weapons spread?

Answer. Resumption of the American breeder reactor program—that is, proceeding with construction of the Clinch River Breeder Reactor—would have an extremely deleterious effect on civilian nuclear power programs throughout the world. It would establish beyond any doubt that the United States regards breeder technology, and the plutonium fuel cycle that goes with it, as a safe, manageable technology. In fact, the safeguards necessary to assure that even small weapons-quantities of plutonium are not diverted are yet to be established. Until such safeguards are established and proved, work on Clinch River and start-up of the Barnwell Reprocessing Plant should not proceed. Instead, the Reagan Administration should continue the policies of the Ford and Carter Administrations in discouraging the civilian use of plutonium. The U.S. domestic moratoria on the breeder and on reprocessing programs should be re-established and other nations should be urged to follow our example.

APPENDIX

SENATOR MATHIAS' FLOOR STATEMENT AND LETTER TO PRESIDENT REAGAN

Mr. MATHIAS. Mr. Chairman, today I have written the President of the United States expressing my hope that he instruct the U.S. delegation to return to the next meeting of the International Atomic Energy Agency with new proposals and a renewed commitment to stemming the threat of nuclear proliferation.

It is encouraging to observe the interest the Reagan Administration has taken in the IAEA and the obvious importance that is attached to its work. The wide attention attracted to the IAEA by the action of the United States in protesting the rejection of the credentials of the Israeli delegation will remind the world of the vital function of this international agency.

Having made this point in a forceful way, the President can now take new initiatives. In addition, it would be useful for the Secretary of State to inquire of the U.S.S.R. whether it would support new, more effective international measures by which nuclear proliferation could be detected and restrained. The joint action of the world's two nuclear superpowers would be a major step in the right direction and would be welcomed by people everywhere.

Today we are witnessing both horizontal and vertical nuclear proliferation. More nations are experimenting with nuclear technology, and nuclear technology is ever more sophisticated. Intelligence sources have advised that there are even sub-national organizations that are capable of acquiring nuclear devices.

The United States played a leading role in the founding of the IAEA, during the Eisenhower Administration, by actively encouraging the participation of other nations, including the Soviet Union. Since that time, support for the IAEA has remained a cornerstone of American nonproliferation policy. To abandon our leadership now—or even to appear to step back from it—might damage the machinery of nonproliferation beyond repair.

I urge my colleagues to reflect upon the importance of United States leadership in nonproliferation affairs, and seek ways to enhance the work of the International Atomic Energy Agency. No task is more urgent, no nation more important than ours to its achievement.

U.S. SENATE,
Washington, D.C., September 29, 1982.

President RONALD REAGAN,
The White House,
Washington, D.C.

DEAR MR. PRESIDENT: It is encouraging to observe the interest of your Administration in the International Atomic Energy Agency and the obvious importance that you attach to its work. The wide attention attracted to the IAEA by the action of the United States in protesting the rejection of the credentials of the Israeli delegation will remind the world of the vital function of this international agency.

Having made this point in a forceful way, I urge you to direct the American delegation to return to the next meeting of the IAEA with instructions to pursue new methods of containing the danger of nuclear proliferation. In addition, it would be useful for the Secretary of State to inquire of the U.S.S.R. whether it would support new, more effective, international measures by which nuclear proliferation could be detected and restrained. The joint action of the world's two nuclear superpowers would be a major step in the right direction, and would be welcomed by people everywhere.

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Sincerely,

CHARLES McC. MATHIAS, Jr.,
U.S. Senator.

A REVIEW OF THE REAGAN ADMINISTRATION'S NON-PROLIFERATION POLICY: THE CASE FOR A MULTILATERAL APPROACH

(By Michael J. Brenner, associate professor, Graduate School of Public and International Affairs, University of Pittsburgh)

The efforts made by the United States in recent years to strengthen the effectiveness, and the viability, of the global system for controlling nuclear power has suffered from one crucial handicap. It is the decline of American influence over the nuclear policies of other governments, and a commensurate loss in our power to shape the international fuel cycle. Whatever the inherent virtue of American initiatives, however worthy the objectives, they unavoidably have fallen short of expectations.

The dilemma, in a nutshell, is that while the United States continues to assume responsibility for world nuclear affairs, supplier and consumer states alike show little willingness to bend to American pressure, and to forego their prerogative to define their civilian nuclear energy needs as they see fit. Recent experiences carry the lesson that multilateral approaches alone have the potential for building the consensus on nuclear rules-of-the-road in a world where nuclear resources and nuclear competence have become widespread.

The Carter Administration, for all its ingenuity and dedication, never found a satisfactory answer to the problem. Neither key supplier states nor technologically dependent states were inclined to follow its lead on crucial parts of the Carter program, especially the earnestly sought moratorium on reprocessing and plutonium recycling. Coercive tactics were rejected for readily understandable reasons. They entailed unacceptably high costs and promised at best short-term rewards. States forced into line would redouble their efforts to end their reliance on U.S. fuels and other nuclear materials. A conciliatory attitude, by contrast, too easily could lead to concessions that jeopardized the integrity of the Administration's policies. INFCE provided an expedient way out, insofar as it dampened conflicts while offering a vehicle for broad-based discussions. It did not, however, provide the basis for collective action, or resolve the issue of how the United States can exercise leadership on non-proliferation.

THE REAGAN POLICY THREE ISSUES

Upon taking office, the Reagan Administration inherited a long agenda of outstanding non-proliferation issues. Its length reflected at once the strong resistance elsewhere in the world to much of the Carter program, and the absence of easy answers to the intractable problems raised by plutonium fuels and spreading technical capabilities. Three issues have been of central importance.

(1) What should the United States do about plutonium? More specifically, there were the firm plans of the West Europeans and Japanese to recycle plutonium extracted from U.S.-origin spent fuel. These states had pressed hard for an unrestricted right to proceed with their own plans for closing the back-end of the fuel cycle through reprocessing.

(2) How tough a stance should the United States take on nuclear exports to other parties? Should Washington insist on strict adherence to the conditions embodied in the Nuclear Non-Proliferation Act *or* rather accommodate standards to individual cases in the hope of maintaining some leverage over the status and disposition of nuclear facilities?

(3) What priority should be accorded non-proliferation as compared to other foreign policy goals, and how much political capital invested in its pursuit?

The Reagan Administration's actions during the past twenty months indicate an orientation markedly different from that of its predecessor. However, I believe that the present strategy has no greater prospect of ultimate success. For it is no better designed, or more capable of eliciting the sort of commitment to collective action required for building a new proliferation regime. A brief review of current policies reveals the underlying weaknesses of the Administration's approach.

(1) The Reagan Administration has, in effect, given the West Europeans and Japanese a green light for moving ahead with reprocessing and, implicitly, for recycle into light water reactors as well as breeder reactors. A number of recent decisions amount to a license to proceed without fear of United States' opposition. Advance, long-term consent has been granted for retransfers of U.S.-origin spent fuel to the United Kingdom and France for reprocessing. Approval also has been extended for the export of sensitive reprocessing equipment. While the disposition of the recovered plutonium remains subject to American consent, *in principle*, clear signals have been given of Washington's readiness to acquiesce in long standing plans for plutonium recycling.

The Administration's position is based on two premises. First, that since these programs exist anyway, and since the countries concerned pose no evident proliferation risk, the United States is simply acknowledging the inevitable while laying the basis for improved cooperation on other non-proliferation matters. Second, the Administration, taking a relatively benign view of the risk inherent in the commercial spread of plutonium and related technologies, rejects the argument that recycling by countries with mature nuclear programs will encourage it elsewhere and, thereby, accelerate the spread of a dangerous weapons capabilities.

The risks associated with plutonium are debatable; indeed they have been debated with great passion ever since President Carter launched his campaign against its commercial use five and a half years ago. However gravely one judges the risk, no one with responsibility for non-proliferation policy can view plutonium's spread with complete equanimity. Nor can one easily dispute the idea that what the technically advanced states do sets an example for others, and offers grounds for their laying a legitimate claim to plutonium.

The most damaging consequences of a hands-off approach to the plutonium plans of our friends and allies is that it now becomes politically (if not intellectually) impossible to draw a line of discrimination between those states deemed acceptable proliferation risks—and granted the right to reprocess, and those from whom it is withheld because they are of "proliferation concern," to use the Administration's term.

The only other possible criterion for granting selective approval is that of economic need. It is of doubtful feasibility, though; for it places the United States (and other suppliers) in the position of deciding for sovereign states what their energy requirements are, and determining a schedule for how they should be met. Standards of "reasonable need" were the main stated basis on which the Carter Administration judged certain West European and Japanese plutonium-related projects worthy of exemption. Their policy of referring to a country's overall nuclear program, economic circumstance, and the temporal relationship of contractual agreements to passage of the Nuclear Non-Proliferation Act (the "grandfather clause") were no more credible or liable to stand the test of time.

The simple, if discomfiting truth, is that foreign governments are not prepared to accept dictation from the United States. Non-weapons, and technologically dependent states, in particular, will fight against further restrictions on the availability of nuclear fuels above and beyond those to which they ceded in the NPT. The willingness to pay this implicit penalty will only be forthcoming when legitimate national interests in nuclear energy are protected through collective institutions. Some form of multinational arrangement to assure access to plutonium fuels and breeder technology is probably a condition for restricting national ownership of sensitive technologies and controlling the spread of plutonium.

Access need not be unqualified. Operational control of multinational facilities need not be shared equally. Moreover, the move toward plutonium might properly be postponed on non-proliferation grounds as well as economic ones. But steps must be taken soon to close the fuel cycle internationally, if we wish to avoid the risks inherent in only partially regulated national closure.

(2) The issue of export criteria raises even more troubling questions about the non-proliferation policy of the Reagan Administration. Here, too, recent actions point up the logic of pursuing a multilateral strategy. For a collective approach is the only one that can hope to produce uniform guidelines among suppliers, and thereby extricate the United States from the impossible position of trying by itself to reconcile a legal commitment to strict, universal standards with a diversity of national circumstances and proliferation risk.

The Carter Administration believed that the integrity of a strict export policy could be maintained while making occasional exceptions where some accommodation was judged absolutely necessary for retaining a modicum of international control and American leverage over a national program (e.g., India). By accepting individual compromises in a tough declarative policy, it ran a dual risk. One, principle was degraded as skepticism grew about the United States' true convictions. Two, there was a good chance that dependent states would increasingly look to other suppliers with a concommitant drop in American power to influence their nuclear programs.

The Reagan Administration has taken up where its predecessor left off. Its action in seeking, and assuring exemption for Pakistan from the Symington Amendment, in order to conclude a multi-billion dollar military assistance program, carried the earlier pragmatic logic several steps along the road of declining credibility. The Executive has since abandoned any serious effort to defend the principles incorporated in the Nuclear Non-Proliferation Act; it seems more interested in finding all available means to circumvent it.

The generous standards used by the Commerce Department, which acts free of the Act's restraints in licensing exports of "dual-use" equipment to South Africa is a case in point. Another is the Energy Department's policy of granting liberal authorizations to U.S. firms that permit their foreign based subsidiaries to sell sensitive nuclear materials to states that have resisted full-scope safeguards.

Here, again, one can argue the degree of proliferation risk entailed in following such a policy. (I find it intolerably high). One can debate the virtue of new legislation to prohibit circumventions of existing statutes. Official American thinking clearly is now very different from what it was two years ago; the Executive conscientiously views the situation as calling for the highly flexible export policies it has introduced. Nonetheless, there is reason to believe that the Reagan Administration would be less inclined to incur the measure of risk it sees in liberal nuclear trade rules were other suppliers observing stricter guide-lines. Current policy seeks to retain some leverage over foreign buyers at the expense of relinquishing potentially dangerous nuclear materials. Under competitive circumstances, market logic inevitably drives down restraints and expands the freedom of buyers.

Washington alone cannot break out of this vicious cycle. Tightening and extension of common supplier rules would be desirable, and is one avenue to pursue. It is not promising, however. In theory the disbanded Suppliers Club could be reconstituted; but its members are under too many political and economic constraints for them to willingly open themselves to attack by the nuclear dependent states. The latter would see themselves as the victims of yet another concerted act of discrimination by the rich Western nations.

The promulgation of new guidelines to govern the commerce in nuclear materials can only be done by supplier and consumer states acting jointly. The condition for agreement, in turn, would have to be substantial progress in building a network of multinational facilities. Greater assurance among consumers that their stake in nuclear energy is protected, may then be accompanied by a keener sense of collective responsibility and a wider view of national interest.

(3) The discouraging set of choices that awaited the Reagan Administration has affected its judgment as to how much political capital it should consider investing in non-proliferation efforts. It quite clearly was unprepared to match the high stakes that President Carter had committed. For one thing, it did not accept the latter's assessment of the problem and appraisal of the risk. Controlling the spread of capabilities was devalued; dealing with the security needs of prospective nuclear powers was emphasized; and the dangers of loosening up on exports downplayed.

We should bear in mind, though, that the Reagan Administration's judgment was influenced by an estimation of the high costs entailed in following a strict non-proliferation line, as well as by the skeptical evaluation of benefits. Given the

unfavorable means/ends ratio against which its predecessor had struggled, it was quite reasonable for the Reagan Administration to set off on a different tack. Their error, I believe, has been in assuming that their only alternative is to loosen the reins in the hope that residual, diminished influence will be enough to prevent states from taking up the nuclear option given them by spreading capabilities. They have neglected another policy alternative, the multilateral route.

THE LOGIC OF MULTILATERALISM

A collective effort to establish an amended code of nuclear conduct to cover new technical and commercial circumstances is a form of political load-sharing. By sharing the diplomatic and political burden of regulation, the United States—and every other supplier—gains greater flexibility in deciding whether a more restrictive policy is worth the cost.

The building of multinational institutions—for waste management, reprocessing, and fuel exchanges—carries the further potential for reconciling non-proliferation objectives with the realities of disposal power and unequal nuclear endowments. They could be the kernel around which a new consensus on collective management of the international fuel cycle develops. Without the cultivation of common norms on what constitutes proper nuclear conduct, we are left with the unpromising, and unsatisfactory choices of the Carter and Reagan Administrations.

Multilateral means are not the perfect answer to our non-proliferation problem. They do represent the best of our unsatisfactory choices. Congress recognized this in affirming its support for a Multinational Fuel Bank and urging the creation of international facilities for spent-fuel storage. The concluding report of the International Nuclear Fuel Cycle Evaluation also spoke in terms of fuel banks, multinational facilities, and of a Uranium Emergency Safety Network including stockpiling, cross-contracting, and related confidence-building measures. Numerous expert studies have elucidated the practical requirements for implementing them.

We reasonably cannot expect to achieve the utopio in safe, international management of civilian nuclear power. There are a host of technical as well as political problems to be overcome. Complete multinationalization of the international fuel cycle almost certainly is not in the cards. Indeed, it is unlikely that even the most sensitive parts of it could ever be rendered entirely safe and effective. Yet significant improvement in non-proliferation benefits, over critical elements of the system, through multilateral efforts, is a reachable goal. Making the attempt is imperative.

[Whereupon, at 12:31 p.m., the committee adjourned, subject to call of the Chair.]

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